



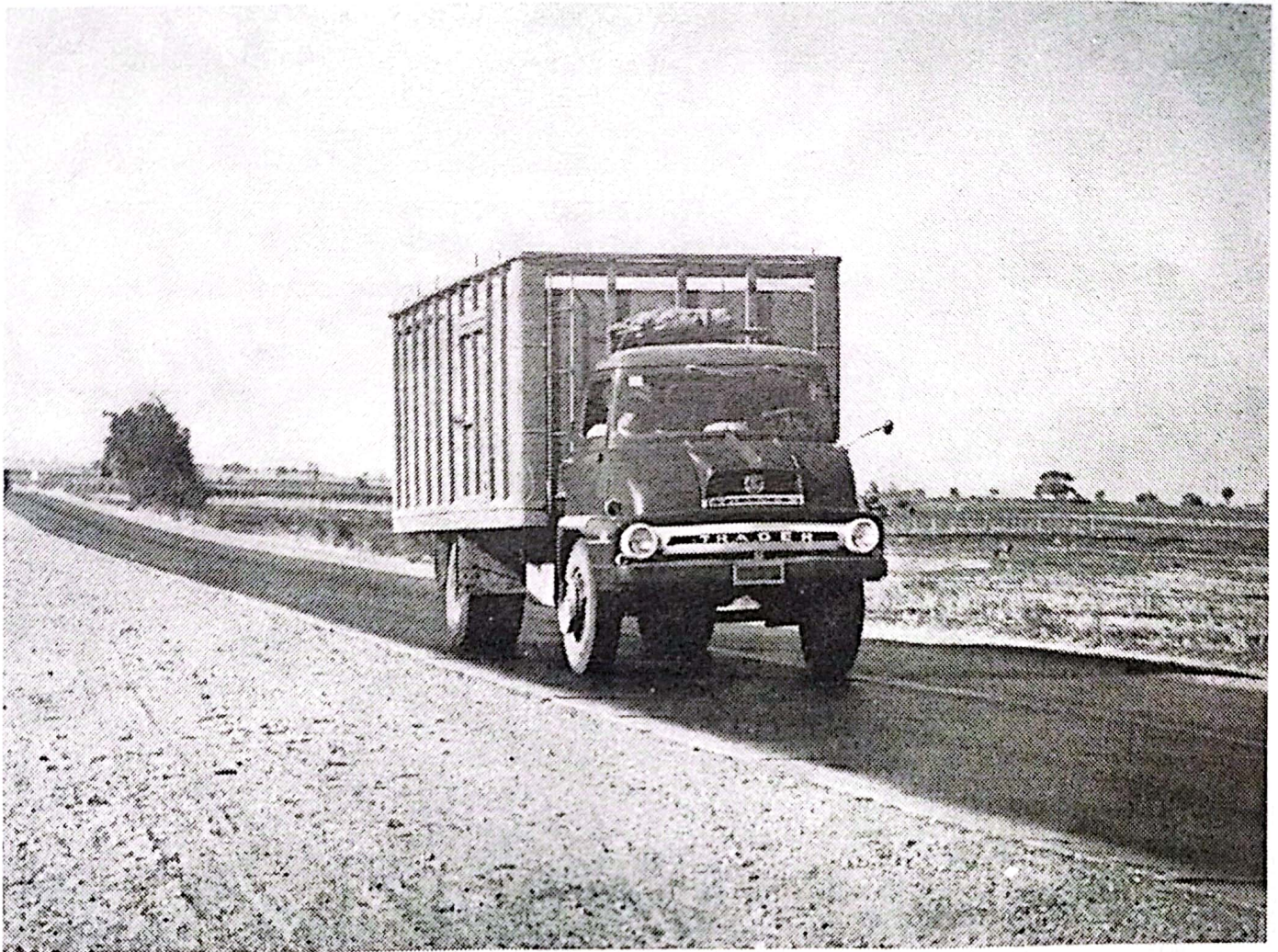
# *PHILIPPINE GEOGRAPHICAL JOURNAL*

VOLUME VIII

JANUARY - JUNE 1964

NOS. 1 - 2

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# The PHILIPPINE GEOGRAPHICAL JOURNAL

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**GEOGRAPHY AND RESOURCE MANAGEMENT\***

RUBEN L. PARSON

THE following discourse contains no gems of new knowledge for a geographer; it was prepared for a public audience. However, the geographer may find here a few ideas to bolster his stock-interest in natural resources and their rational utilization; and it is certainly for this purpose that the Editor deemed it worth printing.

The geography of resource management has been my main career interest, both as teacher and practitioner; and most of my life is already invested in it. The investment has been tremendously rewarding in terms of intangible dividends, and those I would share with anyone interested.

I use the term "resource management" advisedly, and urge you to discriminate between its connotation and the vague meaning of "conservation," a popular term that has become confused with nature study and outdoor education. Resource management means exactly what it says; but its systematic projection is often identified as "planning," a field of activity involving the same facets of geography.

By way of approach to my subject I should like to offer three premises for your consideration: (1) that we need

qualified generalists to orient and direct our specialists, (2) that geography is a general discipline, unique in scope and synthesis, and (3) that the generalist geographer has a clear responsibility in the coordination of resource management.

**SPECIALISTS DEVELOP NARROW PERSPECTIVES**

My first premise involves our entire educational system. We live in a wonderful, accelerating age of technology, automation, and mechanization, and we owe much of this amazing culture stage to specialization. It was initiated by men who devoted their lives to fine-drawn lines of inquiry. We need an increasing number of specialists to insure continued progress; but even more urgently we need generalists, men with broad perspective, based on comprehensive rather than specialized training. We need more men who see trees as mere components of the forest. We need more men competent to focus the work of many specialists on one desirable objective, men conversant with many fields and biased toward none. When a statesman asks a mathematician for advice on foreign affairs, I become suspicious that he is merely a politician who never studied political science. And when a nuclear physicist tells me how efficiently re-

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actors operate, I suspect that he is innocent of economics. But unless we have a sufficient corps of generalists, trained and recognized, we shall seek from science specialists the judgments and decisions they are not competent to make.

#### GEOGRAPHERS DEAL WITH COMPOSITION

My second premise is a bold-faced assertion that my profession serves as a common meeting ground for many specialized disciplines. Geography is a field of science wide as the world and about as general as any body of knowledge can be. Mind you, all geographers do not consider themselves generalists; but geographic generalization is the idea pertinent to this discussion.

#### A GEOGRAPHICALLY ILLITERATE PUBLIC

Regrettably few Americans know what geography is or what geographers do. Many remember geography only as a recitation of places and boundaries in the fourth grade. Some ridicule it as a nonentity; others hold it in utter contempt. A geographer must become inured to ridicule! I remember vividly my first exposure to this tempering process when, as a young bachelor, I attended a faculty tea for new professors. One by one, the old maids and young widows engaged me in small talk, and one by one, they were disillusioned. Although their thoughts were of moonlight and romance, the occasion seemed to demand that they inquire into my profession. And at the mention of geography, the gleam left their eyes, their noses went up, and they excused themselves, concluding that a Ph.D. in a fourth-grade subject must certainly indicate awkwardness as well as stupidity.

#### GEOGRAPHIC PROSPECT BRIGHTEST

Aside from its frustrations, geography can be a most challenging and gratifying profession. A few mental giants have become famous as geographers, and even the rank and file of us, with a modicum of intelligence, can serve with pride and gain a sustaining satisfaction from our work. Geography demands no special skill or aptitude; however it does require devotion and perseverance. Unless a student possesses certain qualifications he would be a failure even in geography. If he has a consuming curiosity about the world and how it hangs together, a willingness to read and work diligently, a determination to be informed on major issues in a score of related fields, and a kindly disposition toward other workers even when they snub him — only then should he consider becoming a geographer.

Those of you already embarked on a geography career may proceed with confidence because the prospect for American geographers has never been brighter than now. For instance, the City of Chicago began two years ago a search for several hundred high school teachers with masters' degrees in geography. Of the handful that applied, only a score qualified, and less than a dozen accepted positions. The search is continuing. Considering that demands outside teaching are also growing, my secret fear is that the market will so far exceed our supply that requirements will have to be revised. Geographers constitute such a small fraternity that they have often been displaced by the sheer force of numbers. Unfortunately, few geographers have aspired to administrative positions that determine educational policy.

## ARBITER BETWEEN SCIENCE AND SOCIETY

By definition, "geography" means simply "earth description," and in fact, description alone may be a worthy contribution. The composite attributes of any place or region, observable differences between one area and another, environmental relationships within a region and between regions—these are typical subjects for geographic investigation and interpretation.

Geography has evolved through about the same stages of development as other sciences. Beginning with description, it proceeded to *interpret* what it described. Then it ventured to *predict* what would happen in a given situation; and finally it has presumed to *control* the eventualities! This control idea is, of course, the basis for geography's role in resource management and planning.

Geography has been called the coordinate science, the synthesizing discipline. Properly, it functions as the intermediary between the natural and social sciences, and borrows freely from both fields. Academically it explains the physical and cultural elements of our environments and human reaction to that environment. In application it seeks to improve the environment and refine our adjustment to it. Man is the focal interest of geographers; to better understand him and enhance his proprietorship over the earth they integrate many kinds of knowledge from all available sources. This integration of elements from several disciplines to illuminate a central issue stands, I believe, as geography's most distinctive contribution. *Composite comprehension is the unique quality of geography.* The geographer must always build on a firm foundation of such natural and earth sciences as meteorology, climatology,

oceanography, geology, geomorphology, ecology, and pedology. (Climate, rocks and minerals, water bodies, landforms, vegetation, and soils are the fundamental elements of natural environment.) On this foundation man has developed his multiplicity of cultures, each influenced by natural conditions and resources, and their world pattern generally coincident with natural arrangements. This is the geographer's line of departure! In essence, he wants to know how men live in a certain environment, why they live that way, and whether they might live better. He seeks help from history, sociology, anthropology, demography, economics, psychology, political science, and other traditional disciplines. He enlists such applied sciences as engineering, medicine, agriculture, forestry, fishery science, commerce, and education. He attempts to trace from the past the persistent influences of geographic environment, and project forward the constant refinement of cultural response to factors both human and natural, including our increasing capacity for environmental modification and manipulation. Our continual sophistication and technologic progress challenge no one more than the geographer.

Geographers have no qualms of conscience when they take from related natural or earth sciences. Geography is actually the mother science that spawned most of them. Geology, ecology, oceanography, pedology, and meteorology were branches grown large on the geography tree before they broke off and took root by themselves. Climatology and geomorphology are sprouts still largely shaded by the mother tree.

In dealing with the social sciences, geographers count on bargaining power, because they ask only fair exchange, returning in kind about as much as they

borrow. History that ignores the geographic setting becomes a supercilious chronology of events in vacua. (Toynbee's bid for immortality would be better assured if he were less scornful of geography.) Without the geographic concept, economics and sociology would be confined to unrelated, isolated situations; anthropology would have neither origin nor direction; demography would be a compilation of statistics with half the meaning they ought to have; political science would lack the sturdy factors of location, size, shape, and definitive boundaries. All these disciplines are well served by geography, and in turn that which I consider genuine geography would have neither purpose nor function without them. I should like to see the mutuality that already exists considerably strengthened, because I believe it would profit all the parties. Geography is a logical agent for inter-disciplinary exchange and can preside equably and judiciously where many interests must be reconciled. Nowhere is this geographic faculty better exploited than in the appraisal and management of natural resources.

#### RESOURCE MANAGEMENT PUTS GEOGRAPHY TO WORK

My third premise concludes that resource management is simply a practical application of traditional geography. Having made a case for generalists, and belabored the idea that geographers are, or ought to be, professional generalists, I should now like to explain how geography serves as coordinator of resource management. First of all, consider that all natural resources—water, soils, forests, grasslands, wildlife, aesthetic features, minerals, and marine wealth—are simply components of the

environment over which man presides. Natural resources are the entire basis of our material culture. We make our living by exploiting them for useful purposes. To make them serve us better is the intent of resource management. Since they are disposed all about, over, and under the landscape and often intricately related, any adequate appraisal of them must be comprehensive, considering all in relation to each other. An appraisal, often referred to as an inventory or a survey, becomes the first step toward a plan for resource management. This comes immediately within the province of geography, because a resource survey differs little from plain geographic description except in point of view. Description may be academic; the survey should be practical and no less attentive to social and economic implications than to natural phenomena. The object of the whole business is human benefit, just as man is the focal interest of conventional geography. There can be neither geography nor resource-management without the human element.

The association of natural resources revealed by a survey demands a commensurate integration of their development and management. If one resource is manipulated without regard for the others, the singular improvement may be much less than the overall damage. Unity must be respected, coordination effectively maintained. For the critical coordinating function the geographic generalist is especially well qualified. He formulates his recommended program on the basis of all contributing factors, both natural and cultural, often assembled on maps the better to see relationships. One question pervades his entire effort: "Which management program will bring opti-



num benefit to the most people for the longest time?" His greater concern with human welfare and dignity than with the entire wealth of earth materials distinguishes him from the resource-oriented specialist.

If you will bear in mind that I am not disparaging the important work of specialists, I should like to cite a few ways in which they fail when they attempt to resolve resource problems independently. Sometimes the wildlife expert becomes so enamored of animals that he forgets the landowner that harbors them. When he wants brush where corn should grow, the righteously indignant farmer laughs at him. Business or industrial economists are inclined to be too coldly calculating, obsessed with an urge for profit. They often promote such a short-lived enterprise as mining without adequate concern about consequences when the mineral runs out. Mine closure then forces the planners into a crash program to rehabilitate the withering community, often doomed to failure for lack of coordinated planning from the beginning. The efficiency expert cannot always appreciate our need for nature areas and aesthetic resources that yield only intangible benefits. The nature enthusiast, on his part, may be equally bigoted in point of view. Apparently oblivious to the fact that we shall live in an increasingly artificial and manipulated environment, he seems determined to regain natural balance on the earth even if he must put all of mankind in orbit. Conscientious, well-meaning men trained or interested in only one type of resource have often obstructed resource management in general. Disagreement among specialists is inevitable; indeed a specialist who does not disagree with anyone is probably worthless. However, dif-

ferences should be reconciled before they waste valuable time and compromise a program that is, by and large, meritorious. A generalist arbiter should be responsible for conflict resolution, because two-sided debate often generates more heat than compromise. In a recent conference between biologists and economists concerned with the Pacific halibut fishery, one economist was moved to remark, in effect, that biologists have more regard for fish than for fishermen. At such meetings, seeking concert between natural and social scientists, a resource geographer, viewing both sides from the middle, might be useful as moderator. On many issues the geographers join forces with biologists and economists to counter ill-conceived campaigns. For instance, they often stand together against those vain-glorious engineers who, unprovoked, wage perennial war on natural waters with scorched-earth tactics. The defense of good judgment on relative resource values must be well organized to contain bureaucratic maneuvers.

#### RESOURCE MANAGEMENT IMPLEMENTS NATIONAL POLICY

Resource geography has world-wide compass; resource management becomes directly involved with international affairs and world problems. Here one might consider the comparative resource status of every sovereignty, and organize the information on the basis of ideological blocks, a facet of political geography; but here I shall limit myself to a few observations only.

I believe, for instance, that we need not fear Red China's threat to world freedom so long as much of her land lies wasted and her wealth of other resources remains but poorly developed.

However, should she under communistic regimentation, slip the noose of hunger sufficiently to have a reserve of energy for resource management, her potential danger to the world would be frightening. If by plowing her cemeteries, applying technology to her soils and agriculture, and recovering her vast denuded areas she could be adequately fed to build a modern complex of heavy industry and transport facilities, her redundant population would compete in the world markets and the "red-and-yellow peril" would become a monstrous reality. The possibility remains speculative, but trends demand our constant surveillance and vigilance.

Perhaps most immediately vital to world freedom is the future of emergent sovereignties in Negro Africa; and their prospect may well depend on the source of aid and direction for optimal development and management of natural resources. Here lies the best opportunity I've ever known for Americans to be at once magnanimous and selfish with the same money; the greater our munificence, the more secure our investment. We should arrange to station in Africa thousands of American resource managers such as I have mentioned. We should train each of them to speak fluently at least one tribal language before assignment. Many of them should be Negroes. Generalists should go first, to appraise the situation; then they should be furnished specialists to deal with particular resource problems and opportunities. Establishment of such a program could be a sure foundation for peaceful progress.

Human welfare about the world depends in large measure on the availability and conversion of materials; its continuation and improvement depend in like degree on resource management.

Resource management must even absorb the shock of "population explosion" until we learn to control it. Regional relationships between population trends and production trends constitute practical problems of contemporary world geography. We are waging economic war on a world scale; and the munitions for such warfare come from natural resources.

American supremacy as a world power in this era of materialism was derived from a vigorous exploitation of fabulous natural wealth. Our future stature as a nation will be largely determined by the intelligence with which we manage the resources remaining at our disposal. This must be a continuing process, and it will always have flaws in it; however we have made such progress in a few decades that certain American projects and methods are models for the world. We may be proud of our accomplishments and optimistic about our prospects. To me, the most amazing phenomenon in this fabulous United States is our determined improvement of the resource base even while plagued by excessive productivity. Such vision, freely implemented, is certainly a credit to democracy! We are making good progress with resource management in the United States, and geography contributes substantially to the program.

#### GEOGRAPHY CONTRIBUTES TECHNIQUES AND IDEAS FOR CULTURAL PROGRESS

Geography probably originated in ancient Egypt when it became necessary to identify, measure, and appraise the fertile fields of the Nile for purposes of taxation. It gave early traders, navigators, and conquerors their knowledge of distance and direction by evolving the art of graphically representing

a known portion of the earth's surface on a much smaller surface called a map. Whether map-makers became geographers or geographers became map-makers, I do not know; but the craft has always remained a part of the profession. Today's map-makers call themselves cartographers, but their work is none-the-less geographic. A map is a geographic device, whatever it depicts and whatever its function. Maps are essential aids to the resource manager or planner, be they the simple colored drawings showing farm plans for soil conservation or the detailed and costly topographic models often cast in plastic for metropolitan or regional planning.

Since maps are one of their primary tools, it follows that geographers are especially proficient in the compilation of mappable information and its intelligible representation with appropriate symbols, codes, and color schemes. In the early days of T.V.A. geographers mapped the entire valley for land classification, using a field legend of 22 graduated items. Later the Soil Conservation Service adapted such a coded system to "land capability classification," now a standard guide to farm planning everywhere in the country. This represents only one of many geographic techniques with uncommon functional value.

In addition to tools and skills, geography contributed to resource management and planning certain indispensable concepts. The idea of multiple-use that is becoming increasingly prominent in various resource fields is clearly geographic, deriving directly from the environmental unity I mentioned earlier. Its importance is attested by several Acts of Congress requiring coordinated development of associated resources. Public Law 566 as amended, and the

Multiple-Use Forestry Law enacted in 1960 are good illustrations.

Regionalism is probably the most valuable geographic concept applied in resource management and planning, an idea profoundly versatile and flexible, both academic and utilitarian. There are as many kinds of regions as there are courses in the education curriculum, so I shall mention only a few with demonstrated pertinence to my subject. River basins and watersheds, naturally defined by topographic divides, have become a geographic basis for unified planning and development of drainage regions. The migratory habits of certain fishes prompted regional organization for the management of our marine fisheries — Atlantic Gulf, and Pacific. The mobility of Great Lakes aquatic life compelled us to negotiate a treaty for regional cooperation with Canada. Acknowledging the continental itineraries of certain waterfowl and other birds, we signed a Migratory Bird Treaty with both Canada and Mexico. Natural regionalism often demands coincident administrative or operational regionalism in resource management. The geographic concept *will* prevail!

Industrial regionalism stems from so many complexities, both natural and cultural that I hesitate to introduce it for fear of conveying a false notion of simplicity. However, I am moved to recall a few classic examples. Regional resource geography sited the incomparable steel center of Gary; it provoked fifty years of sectional debate on the St. Lawrence Seaway, and finally built it; and now it has brought aluminum plants to the Ohio Valley. On every hand one sees industry responsive to geographic regionalism, and regionalism, in turn, modified by industry. The culture pattern reflects the resource pat-

tern, with a fidelity or distortion amenable to geographic analysis. Change in one pattern foreshadows change in the other, so that their geographic correlation is rarely static. The regional planner must anticipate impending changes and revise his plan to meet them. He *must* know geography!

I might submit many other geographic skills and ideas employed in resource management and planning, but I wish to conclude very shortly, and in a more modest vein, lest you think I hold my profession above reproach. Indeed, I might take equal time to deplore the faults and failures of resource geography, but this would malign many of my colleagues, and especially those with only a passing interest in resource management, planning, and programming. I *can* assure you that more projects have been bungled without the benefit of geography than with it. Men in authority, lacking acquaintance with geography, have often appointed specialists to direct planning and have ended up with lop-sided plans.

Once in charge, the self-assured architect or engineer develops a plan according to his own professional specialization and often neglects to avail himself of the geographer's perspective and techniques.

#### MODIFYING THE ORTHODOX

Whether geographic or otherwise, there are many changes and innovations I should like to see. That part of our space budget blasted off just to display our technologic posture I should like to see diverted toward an inventory of earth resources of land and sea. I am less interested in mapping the moon than in mapping marine vegetation, for instance. I should like to see a much

closer integration of city and regional planning, recognizing the interdependence of a metropolis and its hinterland. Soil and land capability maps may have as much value for urban development as for agrarian land use. I should like to see less drainage of land to swell our crop surplus and a considerable rehabilitation of wetlands for ducks and geese until such time as we may need the space for corn and wheat. Long after the Soil Bank expires we might pay Dakota and Minnesota farmers an annual indemnity for sloughs that serve as breeding grounds for waterfowl. I should like to see so-called reclamation projects in the dry West postponed until we need the produce from additional irrigation. Reservoirs now supplying water to lands producing surplus crops may be filled with silt and quite useless before we ever have a real need for them. I should like to see all stripped lands smoothed out as mining progresses; deep mines back-filled with slag to prevent subsidence of the land after their abandonment. I should like to see long-range planning for the inevitable transition from dependence on exhaustible resources to those that are renewable or perpetual. I should like to see the programming of resource-use systematically accomplished both regionally and nationally. I should like to see a few geographers advising the economists who advise the President! I should like to see standard factory equipment on all motor vehicles to prevent air pollution by exhaust fumes. I should like to see a wholesale planting of trees in all vacant spaces to neutralize excessive carbon dioxide in the atmosphere. I should like to see nuclear reactors outmoded by safe, efficient energy conversions. Then I should like

to see some of that power used to pump sea water through a giant network of pipelines, to extract and process the minerals and organics, and deliver fresh water wherever needed. I should like to see conservation preventive rather than remedial. I should like to see the entire American landscape so well kept that we might view it with pleasure and exhibit it with pride. I should like to see useless political boundaries eliminated and our admin-

istrative pattern arranged more logically. But, more than anything, I should like to see the moral fiber of America exalted above all of our material wealth!

\* \* \*

Dr. PARSON is an associate professor in the Department of Earth Science at Northern Illinois University. In addition to his many activities in conservation, he is Chairman of the Curriculum Development Committee of the Conservation Education Association. He is well known for his college texts in conservation.

**SHADOWS ON THE LAND**

An Economic Geography of the Philippines

Robert E. Huke

Editor

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# THE SOUTHEASTERN NEGROS BUKIDNON TERRITORY AND PEOPLE

TIMOTEO S. ORACION

**S**OUTHEASTERN NEGROS is a great forest area with numerous ranges of hills and mountains. It is home to an interesting pagan group, popularly called Bukidnons, who still labor from day to day in their original patterns of primitive culture to satisfy basic needs in life. Here thick forests have provided them protection from exploitation by their sophisticated coastal neighbors, the Christian Visayans.

## NATURAL ENVIRONMENT

The Bukidnons are scattered in large numbers over the mountain areas of Tanjay, Santa Catalina (formerly Old Tolong), Bayawan and Siaton towns in Southeastern Negros (Fig. 1). In Siaton they are sporadically distributed along the upper river valleys of Siaton, Gilaga-on, Bonawon, and Omanod, with an elevation ranging from 1,000 to 4,000 feet above sea level; in Santa Catalina (Old Tolong) they are found in the upper valleys of Maloconan, Manalongon, and Nagbalaye, having an elevation of from 500 to 2,000 feet above sea level; in Bayawan they are scattered around the hills surrounding the valley of Amio towards the sitios of Abaca, Lebas and Kantugpa, having an elevation of 1,000 to 3,000 feet above sea level; in Tanjay they are located around Hinagbaan, Karima, and Kambantog, with an elevation of about 3,000 feet each, and Bala-yong, with an elevation of about 1,000 feet.

Their habitat lies roughly within the central part of Southeastern Negros, at elevation 3,000 to 5,000 feet above sea

level. Noteworthy to mention are its high mountain peaks which can be seen from the coastal region: Cuernos de Negros (Talinis), considered the highest mountain peak (6,242 feet) of Negros Island, is visible from Dumaguete; Balinsasayao mountain (Kambunyo or Guinsayawan), its beautifully sharp, conical peak rising to a height of 4,300 feet, is seen from Tanjay as a perfect cone; the Dome and Sharp Peaks, elevation 2,815 feet, are both visible from the coasts of Gilaga-on, Bonawon, and Omanod in the town of Siaton.

In the area are a good number of rivers capable of producing electric power. Lake Balinsasayao (3,202 feet), lying at the foot of Balinsasayao mountain, if harnessed would be able to supply cheap electricity from Bais town through Dumaguete City. Its surface area covers about 80 hectares.

Southeastern Negros has a truly tropical climate, with warm or hot days and normally cool and refreshing nights. There are two marked seasons, the dry and the rainy. The dry season usually begins in February and ends about the middle of May. It is characterized by warm and hot days with cool nights. During this period the average day temperature ranges from 91 to 92 degrees F. (33 to 34 degrees C.); the average night temperature from 70 to 75 degrees F. (21 to 24 degrees C.). The rainy season begins in June and continues through January. At this time, the average day temperature drops to about 78 degrees F. (25.5 degrees C.), while the night temperature stays at about 70 degrees F. This area is greatly affected

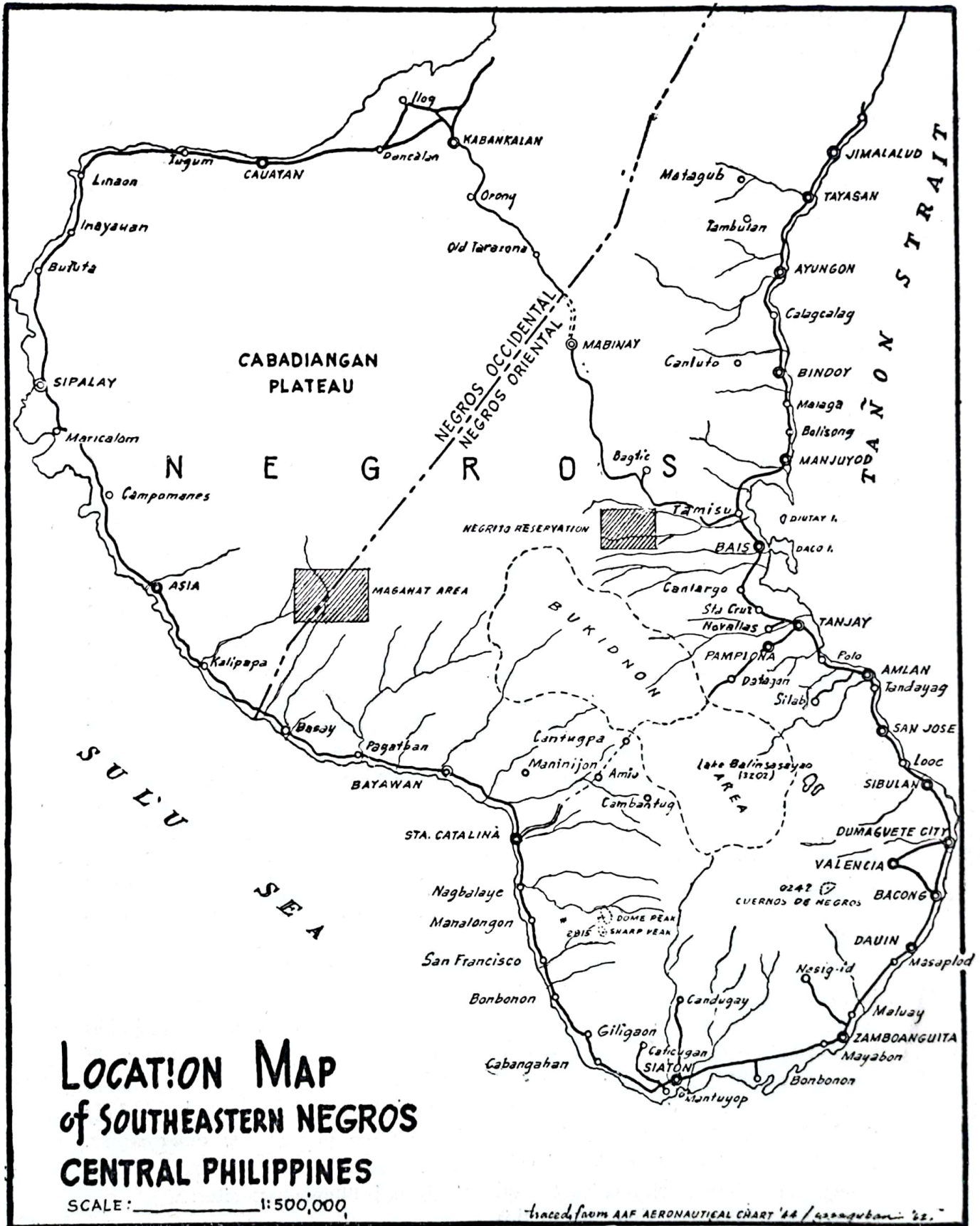


FIG. 1.

by the Northeast and Southwest monsoons. The towns of Tanjay, Amlan, and Sibulan, and the city of Dumaguete are affected by the former from November through February; Bacong, Dauin, Zamboangita, Siaton, Santa Catalina, and Bayawan towns by the latter from June through October. Their yearly occurrence periodically brings to a standstill the fishing industry of people living along the coasts. By necessity the northern and southern population are alternately dependent on each other for their fish supply.

The forests of Tanjay, Santa Catalina, Bayawan, and Siaton towns are considered to be the best in the area. Tanjay is a major supplier of lumber to Negros province and neighboring provinces. Most of the supply comes from the sawmills of Arnaiz Brothers Lumber Co., a privately-owned corporation which has been in operation since 1933. At present this factory has a daily output of approximately 16,000 board feet. Bayawan has five sawmills and one plywood factory; a good portion of its lumber are exported abroad. In Santa Catalina two lumber mills are in operation. These technological activities are mentioned insofar as these affect the life of the Bukidnons around these areas, as will be shown later.

Besides the places mentioned, the rest of the area also is covered with thick forests visible from the coasts. In the interior mountains a number of edible roots, tubers and leafy vegetables can be had for the taking. Wild hogs and wild deer are plentiful, while freshwater fish and shells are ample. Summer finds the Amio valley teeming with migratory wild ducks. Different species of wild pigeons and doves, wild chicken, and other edible birds are abundant in this area.

#### BUKIDNON SOCIETY AND CULTURE

In the ethnographic literature of the Philippines, the name *Bukidnon* is mentioned by some early anthropologists. Although Beyer does not actually use the word *Bukidnon* in his writings, he implies the existence of such a group:

There are, in the mountain regions of . . . Negros certain groups of non-Negroid or only partially Negroid people who are difficult to classify. Most writers have casually dismissed them as descendants of *remontados*, or outlaws from the Christian towns, who have fled to the hills and there mixed with the wandering bands of Negritos. While it is doubtless true that these groups have been occasionally augmented by *remontados*, more recent and careful investigation clearly demonstrates that the basic element is not the Negrito but rather certain other quite different types. All these groups are pagan in belief . . .<sup>1</sup>

In the same literature Beyer states that in Negros there were 19,258 of these pagan groups located in the mountains and valleys throughout the central portion of the island; 4,220 being reported in Occidental Negros and 15,038 in Oriental Negros. The great majority live in the southern third of the island.<sup>2</sup>

Beyer further continued:

The second group numbers not far from 15,000, and in physical type closely resembles the Christian Bisayans of the regions; that is, they are of the Malay blend with the Indonesian element predominant.

. . . in culture they are of medium advancement practicing dry agriculture and many local industries. Their religious beliefs are highly interesting, and are similar to those of pre-Spanish Bisayas.<sup>3</sup>

So far no anthropometric work has been done among the Bukidnons of Southeastern Negros. Their condition and institutions have not been fully described in any of the older works. From available information, Professor Ferdinand Blumentritt cites:

Buquitnon is a 'race' by this name, on the island of Negros, until recently unknown (used



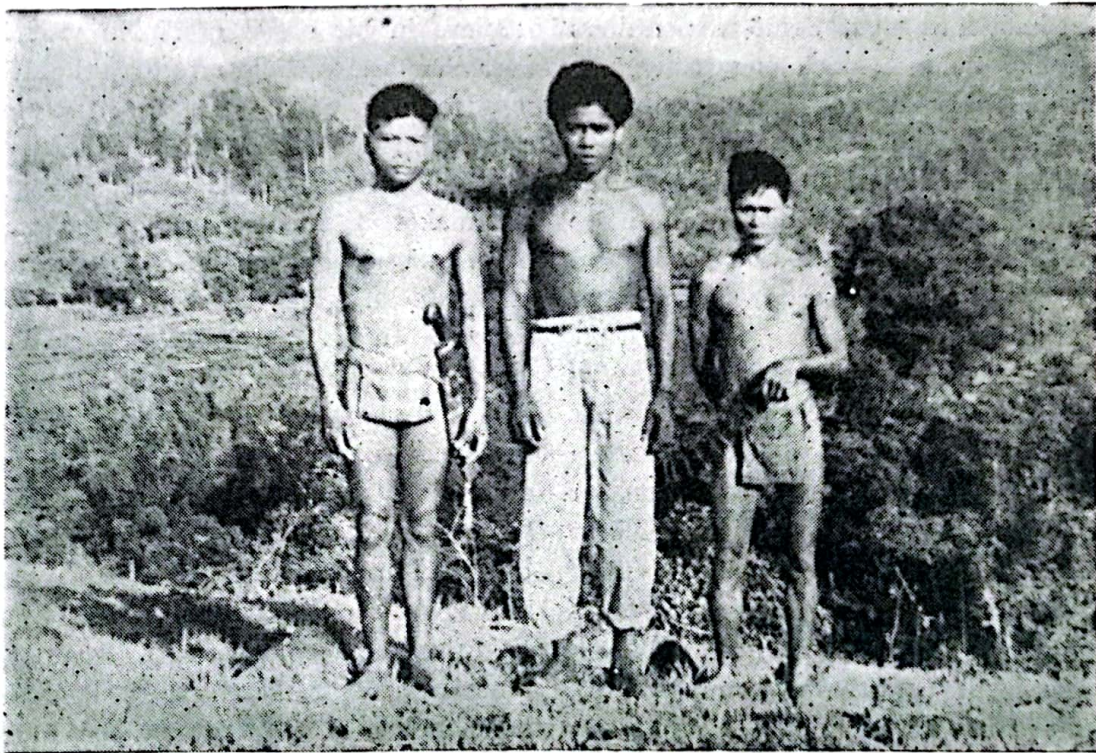
in *La Oceaña Española*, Manila, August 9, 1889, copied from the *Provenir de Visayas*). The Buquitnon are said to be a heathen tribe of about 40,000 souls that has its home on the mountains of Negros, not massed together and not to be distinguished from the Visayan living on the coast. Whether the Carolines are identical with them is hard to say. The name Buquitnon and also Buquidnon in Mindanao means mountaineers, upland forest dwellers. . . .<sup>4</sup>

It is highly probable that the terms *Bukidnon* and *Buquitnon* are altogether the same. The word *Buquid* or *bukid* in Cebuano Visayan means "mountain." The suffix *-non* means "people of." Throughout this paper the word *Bukidnon* will be consistently used.

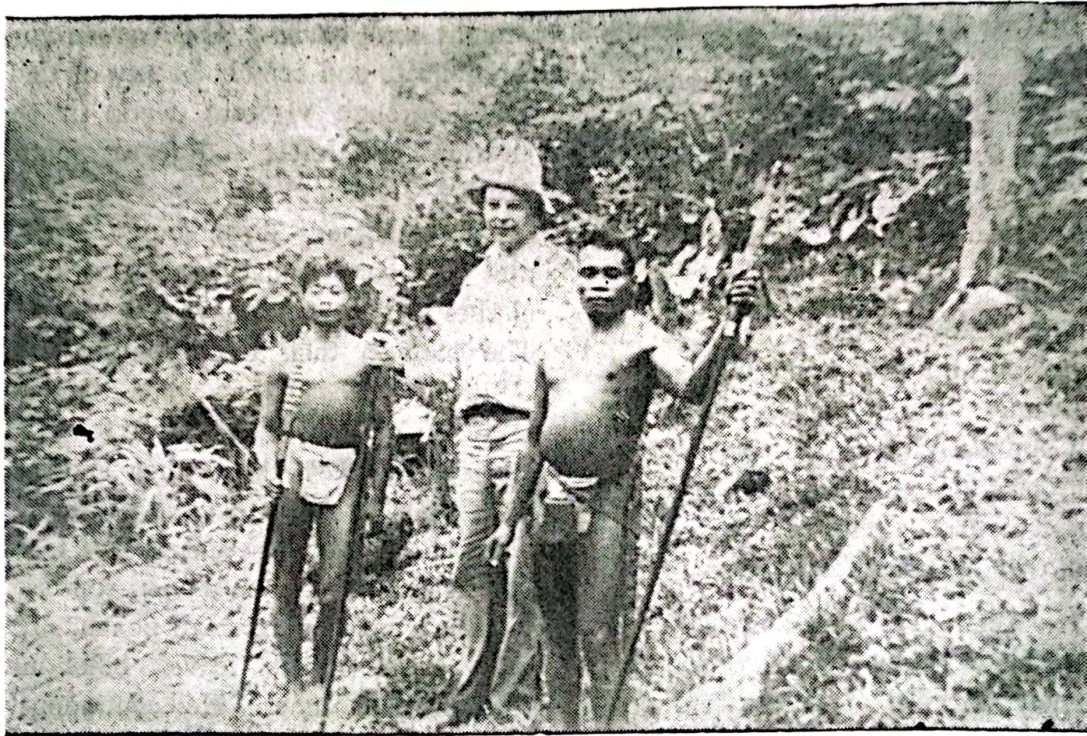
The Bukidnons are of medium build. Their bodies are well proportioned and shapely because of the nature of the terrain and topography and constant hunting of wild pigs and deer. Their skin varies from light brown to dark brown. Their hair commonly is coarse,

straight and black. The women lose the delicate and comely beauty of their youth through vigorous work in the clearings and forest and regular child-bearing.

The Bukidnons dress simply. They are not very much concerned with clothes and therefore have few of them. The men in their daily routine wear G-strings (*bahag*), but when they are in the company of others at feasts or ceremonies, they don either short or long pants bought from the coastal regions or received in exchange for forest products. A Bukidnon always sports on his belt a bolo and a small pouch. The latter contains betel leaves, betel nut, tobacco, and lime. He continuously masticates this as a quid when by himself or among friends. Modern-day Bukidnons have now learned to wear a T-shirt, or a polo shirt. Most of the



Three Bukidnon youths. Note the rectangular G-strings, as compared with the triangular ones worn by the Negritos.



Negritos of a Forest Preserve in the upper mountains of Bais, Southeastern Negros, with Dr. Robert B. Silliman, Vice-President of Silliman University. The spears are common for hunting game.

older women use a short upper garment known as *chambra* and a long loose skirt known as *saya*. Some women dress just like their sisters along the coasts. Cheap, colorful second-hand dresses have taken the fancy of the female Bukidnon. Also, men have found buying finished garments cheaper and more practical. There is reason to believe that, in the long run, men will no longer wear *bahag*.

Both men and women put on very few ornaments. Some times men wear bronze or silver rings, while women adorn themselves with bead, iron, or steel necklaces and bracelets. There are no special dresses for dances or ceremonies except those worn by *babaylans* when performing a ritual.

Headgear consists of bamboo, buri, *tikug* or *balew* hats for men and a strip of cloth for the women. As much a part of a Bukidnon's attire is his pipe

(*honsoy*). A simple clay and bamboo affair, its prosaic form belies the role it plays in his social life. No visit is ever complete without offering a lighted pipe to one's guest, after which stories are swapped between puffs.

A Bukidnon loves his place of birth. He makes it a point to return home before nightfall when he goes to town on business. He does so for several reasons. In his area he is an expert at all his daily pursuits. He can work for long hours in the forest, cutting trees or cultivating his *kaiñgin* farm. He can undertake long trips over rugged and hilly trails without showing apparent signs of body fatigue. Women and children can also cover far distances every weekend going to and coming back from the coastal regions, head and shoulders heavily loaded with forest products.

Because the Bukidnon cannot readily adapt to the culture of his coastal

neighbors, he has often been judged unfairly. Required to work in a way alien to him, he shows indifference and so is unkindly looked upon as lazy. To a Bukidnon, there is no sense trying to work very hard when it is not necessary. There is no use exerting too much effort when it can be done for less. Affected to a lesser degree by fast technological changes, unlike his Christian neighbors, he bides his time by taking life easily. One must consider that the Bukidnons have their specialized abilities — the felling of big trees, fishing, trapping, hunting, or transporting of timber and bamboo by floating them on rivers — which an ordinary coastal individual cannot excel in.

#### SETTLEMENT PATTERNS

#### The Bukidnons of Southeastern Negros

live in scattered small settlements in groups of two, three, or four houses, each house considerably comprising one family. As a rule they do not live in places where they are close to Christian settlers. It is common to find a settlement separated by a steep hill or a deep valley from the Christians. Houses are usually built on hill tops, along steep hill sides, or in the heart of forests. Sometimes one house is so isolated that the nearest Bukidnon neighbor is five or ten kilometers away.

In the more isolated and wilder areas of Southeastern Negros two scattered houses may be seen as one social group. In their small family settlement, a family charts out a space of about one-half hectares (5,000 square meters) for his *kaiñgin* farm. In this clearing, he constructs his house without any prepared plan. In the selection of a site



Two Bukidnon families on their way home to the mountains, after bartering their forest products in the coastal region.



A Bukidnon family. The father and mother are seated on the front stairs of their hut, with the children gathered around.

for an individual settlement, care is taken that all his needs are met. For example, the presence of a creek for water supply and fishing, abundant supply of tubers and wild root crops, a certain degree of isolation to avoid repeated exploitation by government agents and other coastal visitors, and the certainty that the place is not haunted by supernatural beings. When in doubt about the presence of the supernatural in their new places of abode, they consult a *babaylan*, a local medicine man who is the final authority on such matters.

When a place has finally been located and decided, the first step is to clear a spot where the house is to be built. The big trees are felled and cut to pieces and burned. Very few Bukidnons have houses substantially constructed. A few others who have successfully adapted

themselves to plow agriculture and are more permanent in one place have constructed more spacious houses like those in the coastal regions. The majority of the Bukidnons who still eke out a hand-to-mouth existence from the forest have remained satisfied with their lot. Often they have to migrate when their houses get dilapidated, and when their kaingin farms are already covered with cogon (*Imperata cylindrica*) and hand cultivation proves difficult and strenuous. As one travels into the interior forests of this area, he finds many of these deserted houses and abandoned clearings; from these places towards the interior, one finds new clearings on top of hills or along steep hillsides. Here new huts have been constructed to house the family.

During World War II the Bukidnons, being directly under the protection of

the 75th Infantry Regiment Guerrillas, Seventh Military District, were allowed to make new *kaiñgin* farms as they pleased to augment the meager food supply available at the time. During the four years of the war, the response was very encouraging for even the Christians who evacuated to these areas followed suit. This was of course a big loss to the timber resources of the forests but at that time, food was more important in order to survive.

When the war was over, the Bukidnons were no longer allowed to cut new forests but were asked to farm their old clearings. This restriction did not succeed because they eventually deserted their old settlements and transferred to the most isolated areas to make new settlements.

#### CONCLUSION

The influx of Christian settlers to the interior regions, the opening of lumber

mills in the area, the blazing of trails for proposed roads, modern means of air and land transportation, and countless other changes have greatly affected the outlook and status of the Bukidnons today.

The writer believes, however, that the Bukidnons have retained some of their ancient dignity. To an indifferent outsider, the Bukidnon will seem a dull and idiotic individual who does not talk beyond what is necessary. Yes, the Bukidnon is very unhappy in the presence of an outgroup. He is wary of those who look down on him as a lowly individual. When an outsider tries to abuse his hospitality and makes fun of his habits, customs, and institutions, he resents it and may resort to violence to get satisfaction.

The writer had, on many occasions, been in the company of Bureau of Forestry agents. On the basis of those experiences the writer can fully justify



An idle *kaiñgin* field overrun with vegetation, again farmed after the following phase.



A burnt kaingin farm ready for planting. This is a common sight in the interior mountains of Southeastern Negros.

the seeming indifference of Bukidnons at the approach of these agents. The suspicious indifference of Bukidnons towards all government agents is due to the fact that these agents usually ask from them rice, rattan, *balao*, or other products to be delivered to the coastal region. The condition is that by giving these, the agents would not report them to the courts of justice for clearing prohibited areas. For this reason many Bukidnons have retreated so far inland that they have become difficult to reach.

If one understands the Bukidnons, as the writer does, one finds them very accommodating, hospitable, and willing to help. As friends they are honest and sincere and are not capable of breaking a promise. Ignorant as they are of civic responsibilities, they greatly resent the many governmental restrictions on their unlimited use of the mountains' resources on which they have made their

living in time-honored traditions. Perhaps it is not yet too late for the government to initiate a study to ascertain the factors responsible for their precarious existence. Such a study cannot be but thorough and sympathetic if the situation is to be remedied at all.

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# BOTANICAL EXPLORATIONS IN THE PHILIPPINES

EDUARDO QUISUMBING

**T**HIS article is a sequel of my papers entitled "Botanical Expeditions in the Philippines, during 1946 to 1953," published in *Proceedings of the Eighth Pacific Science Congress*<sup>4</sup> (1957) 501-543, and "Flora of the Philippines", read during the National Science and Technology Week, December 6, 1963.

It has been reported by Mr. Demetrio R. Mendoza, present chief botanist of the National Museum, that the mounted specimens in the Philippine National Herbarium, as of December 26, 1963, numbered 82,552. Of this total, fifty per cent or more comprise exchanges from different herbaria of the world, donations from local private collectors, and purchases. It will be noted that when Dr. Merrill retired as Director of the Bureau of Science in 1923, he left with me a total of 275,000 mounted specimens. At the outbreak of World War II, as of 1940 last report, we had in the Herbarium approximately 305,367 mounted specimens, besides having thousands of duplicate specimens for exchange. To date, we barely have one-third of the total collection we had in 1940. The collection lost during the liberation of Manila in February 1946 contained very valuable types and isotypes of Philippine species, and collections from Indo-Malaysia. Fortunately, when I was at Harvard University in 1954 on a research grant

of the American Philosophical Society, I found out that our rich collection of Bornean and Chinese specimens were on loan to Harvard University. I later negotiated for their return.

Rehabilitation of the National Museum was very slow, and were it not for Dr. Merrill's grant of \$1,000 and Dr. Copeland's one thousand botanical driers sent to us, collecting could not have started. By my retirement on November 25, 1961, the Herbarium had 76,983 mounted specimens, besides thousands of duplicates for exchange. The National Museum has since added 5,519 mounted specimens. Of this number, about 50 per cent or more came through exchanges, local donations from private collectors, and purchases.

The principal concern of this paper is to review the explorations made in the Philippines from 1588 to 1901; and also list down the botanists and botanical collectors during the Spanish regime, the American occupation, and the present Philippine Republic.

It is hoped the reader will realize and appreciate the tremendous work that needs to be accomplished in the future; for example, the study of the materials stored in the different herbaria of the world, with the ultimate aim of finally publishing a "Flora of the Philippines".

## A SUMMARY OF THE HISTORY OF BOTANICAL EXPLORATIONS IN THE PHILIPPINES DURING THE SPANISH REGIME

1588 — THOMAS GANDI<sup>1</sup> — on record to be the first to explore the Philippines. *philippinarum insularum*. which is Clusius figured and described *Anisum* known today as *Illicium* sp. The

description was based on material secured in Luzon.

1601 — JACOB C. NECK VAN<sup>2</sup> — an Admiral in command of two early successful Dutch voyages to the East. He

- visited Cuyo Island (Coyo) in August 19, and another island in August 22, 1601. He brought back to the Netherlands a collection of fruits, etc. described by Clusius.<sup>3</sup>
- 1668 — C. J. KAMEL (Camel, Camelus)<sup>4</sup> — a German Jesuit priest who came to the Philippines in 1668 and collected botanical materials, which were sent to James Pertiver in London.
- 1648-98 — IGNACIO DE MERCADO<sup>5</sup> — an Augustinian friar born in Parañaque, Rizal Province; he died in 1698. His father was a Spaniard and his mother, a Tagala. During his assignments in various provinces he collected plants, but did not have these preserved. He also made illustrations of some of the plants he studied. His work on medicinal plants was incorporated in the third edition of Blanco's "Flora de Filipinas."
- 1771-72 — PIERRE SONNERAT<sup>6</sup> — a French naturalist who was mostly interested in zoology, but also collected plants. He traveled in the Philippines extensively: September 3, he was in Cavite and Manila; and its environs, October 25; Calamba and Los Baños in November. He left Cavite on December 29, 1771 for the Visayas. On January 7-13, 1772 he was in Antique, Panay; in Zamboanga and Jolo, January 19-20; was back in Zamboanga February 6-8, 1772.
- 1786 — FRANCISCO NOROÑA<sup>7</sup> — a Spanish physician and botanist. He resided in Manila for some time, until March 1786; and then sailed for Java, March 18. It is not known where his Philippine specimens are deposited.
- 1786 — JUAN DE CUELLAR<sup>8</sup> — came to the Philippines for economic purposes. He collected specimens on many islands here.
- 1805 — FRANCISCO MANUEL BLANCO<sup>9</sup> — an Augustinian friar who came to the Philippines in 1805. He was born in 1780 and died in 1845. He must have collected many plants, which he failed to preserve. Father Blanco was the first to write on the Flora of the Philippines.
- 1792 — LUIS NEE<sup>10</sup> — born in France, was one of the botanists of the Malaspina Expedition (1789-94.) He was accompanied partly by Haenke and Pineda. He was in the Philippines from March to December, 1792. His collections during the world expedition numbered about 10,000; these are deposited in the herbarium of the Jardin Botánico, Madrid.
- 1792 — THADDEUS HAENKE<sup>11</sup> — the other botanist of the Malaspina Expedition on the 'La Descubierta' and 'La Attevida', captained by Malaspina. He missed the boats, but finally joined the expedition in Chile in April 1790. He stayed in the Philippines from March to December, 1792. He made several trips by land: to Ilocos (Ilocos), Panquasing (Pangasinan?), Pampanga, Cavite and Sorsogon in Luzon. He sailed to Mindanao on November 16 and stayed there up to December. His collections of about 9,000 are deposited at the museum at Prague, and other European herbaria: in Vienna, Munich, Berlin, London (British Museum and Kew), Leningrad, Leyden; at St. Louis (Missouri Botanical Garden), Harvard Herbarium, and Manila Herbarium (which was completely destroyed during the liberation of Manila in 1945). Merrill<sup>12</sup> mentions that a number of Haenke's specimens are erroneously labeled. Merrill visited Prague and, during his very short stay there, was



able to identify on sight many of the Philippine plant duplicates which were distributed by Prague to different herbaria of the world.

1792 — ANTONIO PINEDA<sup>13</sup> — was the naturalist of the Malaspina Expedition, with Nee and Haenke. He was with Haenke on tours of Luzon. There is no record that he collected material of either botanical or zoological nature.

1805 — WILLIAM KERR<sup>1</sup> — was Kew gardener and botanical collector. He traveled in China, the Philippines, and Java (Indonesia). He collected in Manila, February 13 to April 1; on April 2, he went on a collecting trip to the mountains of Antipolo, then to Cayinta (Cainta), Pasig River, St. Ann's (Santa Ana, Manila); to Bagumbayan (Barrio of Tagig), Muntinglupa, Rizal Province; to S. Pedro Tunasan, Biniang (Biñan), Santa Rosa, Cabugao (Cabuyao), Calamba, foot of Mt. Makiling, Los Baños, Calauan, San Pablo de los Montes (S. Pablo) in Laguna province; to Tiaong, Sariaya, Lucban, Quezon Province; to Mahayhay, Santa Cruz, Pagsanjan, Lumban (Lumbang), Langas (Longos), Pangil, Siniluan, Mabitac, Santa Maria de Cabuan (Sta. Maria) in Laguna; and back to Baras, Moron, Manila via Cainta and Pasig. He sent live plants to England, some of which may have been preserved in a herbarium.

1817-18 — ADALBERT VON CHAMISSO — was a botanist of the expedition on *Kotzebue*, financed by Prince Romanoff. Before his death he was custodian of the herbarium at Berlin-Dahlem. He was in the Philippines from December 17, 1817 to January 28, 1818, during which he made trips to

Manila, Cavite and Taal Volcano. Merrill mentions about his trip in *Phil. Jour. Sci.* 3 (1908) Bot. 88.

1824 — FRANCOIS LOUIS BUSSEUIL<sup>1</sup> — was chief surgeon and zoologist of the voyage on the '*La Thétis* and *L'Espérance*' 1824-26. He was in the Philippines (Cavite, Luzon) September 18 to December 11, while one of the ships, severely damaged by typhoon, was under repair. Zoological collections were made under Commander Baron de Bougainville. Botanical collections, if any, may have been done on a very small scale, and preserved in the Paris Museum.

1825-26 — JOHANN FRIEDRICH ESCHSCHOLZ — a Latvian surgeon who accompanied the two Russian expeditions, *Voyage in the 'Ruri(c)k'*, 1815-18; and *Voyage in 'Prepriiti'*, 1823-26. He was in Luzon (Manila) November 8, 1825 to January 10, 1826. We have no exact record of what he collected in the Philippines. Very likely a visit to Leningrad, herbaria of Chamisso and Lindemann and Dellesert, may shed some light.

1825-27 — IVAN STEWAR(D)T — was a gardener who accompanied the Russian expedition on the '*Krotky*' round the world, under the command of Captain Baron F. P. Wrangle, 1825-27. We have no data as to the date he was in the Philippines, but he mentions having been in Manila, Luzon. According to van Steenis<sup>1</sup> the Manila (Luzon) collection amounts to 350 plants, deposited in the Leningrad herbarium.

1829 — KARL H. MERTENS — a botanist and a German surgeon of the Russian expedition on the '*Senjavin*', 1826-29, under the command of Captain Liitke. He was in the Philippines in January

1829. Merrill<sup>14</sup> mentions a certain Mertens, a botanical collector in the Philippines.
- 1829 — ANTONIO LLANOS — an Augustinian friar who came to the Philippines to collect specimens; fortunately some of them have been preserved in Rijksherbarium, Leiden (12 specimens), erroneously credited to Blanco, some in Geneva; and over 100 specimens in Madrid (most of these are wrongly labeled). Father Llanos wrote ten papers<sup>15</sup>.
- 1830 — JOSEPH BAUMÉ — a Frenchman who was the naval surgeon of the voyage on the '*La Favorite*', 1830-32. He collected plants in the Philippines, from September 4 to October 31, 1830. The collections are said to be deposited at the Paris Herbarium.
- 1830 — GEORGE BENNETT — an Englishman who was a surgeon of a vessel sent out on an exploration expedition to Australia, the Malaysian region and China. He visited Cavite, Philippines in 1830, but there is no record of the exact date.
- 1831 — FRANK JULIUS FERDINAND MEYEN<sup>16</sup> — a plant physiologist on the voyage '*Prinzess Louise*'. He visited the Philippines in 1831 and collected botanical materials in San Mateo, Montalban, and Jala-Jala in Rizal; Laguna de Bay and Talim island from September 14 to October 15, during the rainy season. Description of a considerable number of Philippine species is based on Meyen's materials, as done by Rolfe and other botanists. He also collected mosses and liverworts. Most of his plants are deposited at the Berlin Herbarium. Meyen, incidentally, described and named plants.
- 1835 — JOSEPH M. M. CALLERY — was an Italian, but became a naturalized Frenchman. According to van Steenis,<sup>1</sup> Callery on the way to China collected plants at Batavia and in northern Luzon, Philippines, in 1835. He collected again in Calauan and Pangasinan, and Mt. Igorottes (Mt. Province), in 1840. He collected also in the Philippines between 1845-50.
- 1836 — CHARLES GAUDICHAUD-BEAUPRE<sup>17</sup> — a French botanist of several French expeditions, particularly of the *Voyage in 'La Bonite'*, 1836-37. He collected plants on December 5, 1836 in Mariveles and in Manila; and Laguna province on December 7-20. His collections are deposited mainly at the Paris Museum and in other European herbaria.
- 1836-39 — HUGH CUMING — a naturalist who traveled extensively; started collecting since 1819 in South America and the Pacific Islands. He brought together extensive botanical, zoological and conchological collections (the latter being the largest in the world), principally in the Philippines. He arrived Manila July 24, 1836. Due to rainy weather, he had to postpone his trips until September. He visited the hacienda of Calaguan (Calauan), staying until December 15 around Laguna de Bay. In 1837, he traveled south to the Visayan islands and Mindanao. He spent ten months in Panay, Guimaras, Negros, Siquijor, Zebu (Cebu), Bohol; and in Camiguin and Misamis in Mindanao. Then going north, he collected in Samar, Leyte, Masbate, Ticao, Burias, and Mindoro; Albay, Camarines, Tayabas (Quezon) and Batangas, in Luzon. He returned to Manila in November 1838, to pre-

- pare for his trip to northern Luzon. He left Manila in November 1839, for Singapore, the Malay Peninsula and Sumatra. He was back in London June 5, 1840. He collected about 130,000 herbarium specimens. He also collected live orchids for the Calcutta gardens and Loddiges. He distributed numerous specimens to different herbaria in the world. Most of the specimens from 1-2153 were collected from the Philippines. Many papers are based on his collections: Rolfe<sup>18</sup>, Merrill<sup>19</sup>, J. Smith<sup>20</sup>, Montagne<sup>21</sup>, Turczaninow<sup>22</sup>, Presl<sup>23</sup>, Palacky<sup>24</sup>, Hasskarl<sup>25</sup>, Muller<sup>26</sup>, Vidal<sup>27</sup>.
- 1838-42 — WILKES UNITED STATES EXPLORING EXPEDITION — Considerable collections were made by William Rich, Dr. Charles Pickering, and William D. Brackenridge along the Pasig River to Laguna de Bay; then in Santa Cruz, Majayjay, and Mt. Makiling in Laguna; in Zamboanga, Mindanao and Jolo island, 1842. Numerous papers on the collections were published by Dr. Asa Gray<sup>28</sup>, Brackenridge<sup>29</sup>, Merrill<sup>30</sup>, and other botanists.
- 1841 — AUGUSTINE P. J. L. LIAUTAUD — a French surgeon of the voyage on the 'Danaide', 1839-43. He arrived in Manila June 2, 1841 and stayed until July 10 in Cavite; on instructions of Gaudichaud, he collected specimens, among which were 173 botanical specimens and medicinal herbs, including some from the Philippines, deposited at the Paris Herbarium. Most of his plants were poorly dried and fragmentary — inadequate for identification.
- 1842 — ISIDRO SAINZ DE BARANDA — collected mostly in the southern parts of Luzon; also in Masbate and in Batan Island about 1842. His collection of 102 species of ferns is described by Laguna<sup>32</sup>. His specimens, which were deposited at the Herbarium of Forestry School, Madrid, were probably destroyed during the Civil War.
- 1844 — EUGENE DELESSERT — a French naturalist. On his second voyage, he visited the Malaysian region. From Hongkong, he came to the Philippines and, according to available records, visited Manila, Yala-Yala (Jala-Jala), Pasig, Taal Volcano, Los Baños, Cavite, etc. He made natural history collections, possibly including botanical.
- 1848 — THOMAS LOBB<sup>14</sup> — a collector, under the employ of Messrs. Veitch, Exeter, et.al., of plants of horticultural value, particularly orchids. Collecting around Manila, he was able to gather herbarium specimens, which he sold in sets, besides live orchids.
- 1852 — HEINRICH WEYRICH — a Russian surgeon of the Russian naval expedition to China and the Philippines. He first sailed on the 'Pallas' and later transferred to the 'Fearless' (Vostoc). According to van Steenis-Kruseman<sup>1</sup>, Weyrich availed himself of every opportunity to botanize when the boat was in port. His specimens are deposited at the Leningrad herbarium.
- 1855 — CH. DE MONTIGNY — in about 1850 was French Consul at Shanghai, China. During his diplomatic missions, he visited Siam (Thailand), Java, Singapore, and Celebes. According to van Steenis-Kruseman<sup>1</sup>, Montigny came to the Philippines in 1855 to collect plants. These are deposited at the Paris Museum.
- 1857 — J. BARTHE — His identity is rather doubtful, but records show that, very likely, he is J. Barthe — a

surgeon in the French frigate 'Sybille'. According to Merrill<sup>14</sup>, Barthe secured plants from the Philippines in 1857, not collected by himself, but given to him by some Spanish residents of Manila. Merrill also mentions Barthe's small collection in his "Enumeration"<sup>33</sup>, p. 50.

1858-65 — CARL GOTTFRIED SEMPER — a German zoologist. He collected hepatics and possibly phanerogams too. He arrived in Manila December 1858, exploring its environs for about a half year. In August 1859, he went to Zamboanga and Basilan, and returned to Manila in March 1860. By May he toured the provinces of Bulacan and Nueva Ecija, up through the mountains to Baler, and down to the coast to Palanan, Isabela; from Nueva Isabela (Isabela Prov.) he traveled August 27 to Aparri, Cagayan and through the Rio Agno (Agno river) in April 1861. The trip was interrupted in November 1861 due to illness. He visited Bohol, Leyte, and the interior of Mindanao May to December 1864. He sailed home May 1865. van Steenis-Kruseman<sup>1</sup> lists Semper's publications on p. 483.

1858 — REGINO GARCIA — one of the very few Filipinos who have done botanical work, despite lack of training and academic preparation. Born 1840 in Manila, he was first employed 1858 in the botanical garden, and from 1877-98 in the Bureau of Forestry. Most of the plates in the third edition of Blanco's "Flora de Filipinas" are Garcia's work. Hundreds of plates in the atlas of Vidal's "Sinopsis" were drawn and lithographed by him. The manuscript for the "Catalogo de las plantas del herbario," published in Manila in 1892, was also prepared by

him. In May 1900, he entered the American civil service as a botanist in the Bureau of Forestry. The Bureau published a 16-page pamphlet written by him, entitled "List of the tree species of the Philippine Islands." He also prepared and published a 50-page brochure, entitled "Los arboles de la goma, resinas y frutos oleosos de Filipinas". He traveled extensively in the Philippines and collected many specimens, which carry Vidal's numbers.

1859 — CELESTINO FERNANDEZ-VILLAR<sup>34</sup> — an Augustinian friar who came to the Philippines in 1859. He was curate from 1862 to 1865 of Barotac Nuevo, Panay; then of Jaro, Iloilo, until 1877. His work was incorporated in the "Novissima Appendix" to the third edition of Blanco's "Flora de Filipinas". Apparently Father Fernandez-Villar did the greater part of the third edition of Blanco's "Flora de Filipinas".

ANDRES NAVES<sup>35</sup> — an Augustinian friar who collected plants with Father Fernandez-Villar. He collaborated with Father Fernandez-Villar in the publication of the third edition of Blanco's "Flora de Filipinas." He identified the monocotyledons in the "Novissima Appendix"<sup>36</sup> and made the Latin translation of Blanco's "Flora de Filipinas". According to records, the specimens collected by Naves and Fernandez-Villar, which were preserved at the Guadalupe convent near Manila, were completely destroyed during the bombing of Manila by invading American forces. Father Fernandez-Villar also collected for Sebastian Vidal; in fact, many of the field labels of Vidal carry the name of Fernandez-Villar.

- 1859-60 — FEDOR JAGOR — a German ethnologist who collected plants in addition to skulls. He traveled extensively in certain parts of Malaysia, including the Philippines. He probably came to the Philippines in the latter part of December 1858 or the early part of January 1859, and stayed up to June 1860<sup>1</sup>. Places visited in the Philippines cover: Manila to Bulacan; Pasig, Jala-Jala, Rizal; Laguna de Bay, Calauan, Santa Cruz, Butucan, Laguna; Mariveles, Bataan; Cagsaua (Daraga), foot of Mt. Mayon, Albay; Sorsogon, Mt. Bulusan, Sorsogon; on his return trip, Batu Lake, Buhi Lake, Mt. Iriga, Igabo, Tibi, Naga, Mt. Isarog, Camarines Sur; Paracale, Camarines Norte; Pasacao, Quezon. He also visited Samar and Leyte. There is no mention of collections after 1860. His collections are deposited in the Berlin Herbarium; duplicates in Leiden, etc. His publication "Reisen in den Philippinen", Berlin 1866, is most interesting.
- 1860 — MARIUS PORTE — a French plant explorer and collector for the firm of J. Linden. He collected in Brazil (1855-58) and near Singapore and in the Philippines<sup>1</sup> from c. 1859-65. In 1860 he shipped live plants, particularly orchids, to Europe from Manila. He was the discoverer of "Marpisang tigre" *Phalaenopsis schilleriana* Reichb.f. He died in Manila January 14, 1866. His collections are deposited at Leiden and Herbarium Vilmorin.
- 1861 — JOHN GOULD VEITCH — the son of James Veitch, founder of the famous horticultural firm Veitch & Sons of Surrey, England. He came to the Philippines in 1861 particularly to collect live *Phalaenopsis*. His collections are deposited at Herbarium H. J. Veitch in the Kew Herbarium.
- 1861 — OTTO SCHOTTMULLER — second botanist of the "Preussische Expedition nach Os-asien", 1859-62. According to van Steenis-Kruseman,<sup>1</sup> Schottmuller collected 662 phanerogams from the expedition, along with some seaweeds. But no mention is made of number collected in the Philippines.
- 1861 — MAX ERNST WICHURA<sup>1</sup> — first botanist of the "Preussische Expedition nach Ost-asien", 1859-62. He was in the Philippines May 2 to June 19, 1861, collecting plants in Manila, Pasig River, Bunag Onag (Binañgonan) Rizal; Laguna de Bay, Santa Cruz, Mahahai (Majayjay), St. Paulo (S. Pablo), Laguna; Tanauan, Laguna de Taal (Taal Lake), Taal Volcano, Batangas; on return to Manila, he passed by Calamba, Laguna; on June 13-18, he traveled in Samboanga (Zamboanga), Mindanao. Most of his collections are deposited at the Berlin Herbarium.
- 1865 — JUAN GONZALEZ VALDEZ<sup>14</sup> — the first Forest Inspector of the Philippines. He collected materials from trees, many of which were sterile. No exact date of collections is mentioned.
- 1870-71 — GUSTAV WALLIS — a horticulturist who was in the employ of Veitch & Sons in 1869. He traveled extensively, and came to the Philippines in 1870-71, giving no exact dates of stay. According to van Steenis-Kruseman,<sup>1</sup> Wallis's collections are deposited in the following places: 130 numbers are in the Berlin Herbarium; 160 numbers at the Kew Herbarium; and mosses at the British Museum.
- 1862-1894 — CELESTINO FERNANDEZ-VILLAR — an Augustinian friar who came to the Philippines in 1859. He

was a curate of Barotac Nuevo, Panay in 1862-65, and of Leyte, until 1877. He came to know about the flora of these islands during his stay there. Together with Father Naves he collected plants of different species, later preserved in the convent of Guadalupe, near Manila, which got burned down. Father Fernandez-Villar wrote an article "Catalogo de muchas de las plantas..."<sup>34</sup>; for biological data see Merrill<sup>14</sup>, pp. 13-14.

1871-89 — SEBASTIAN VIDAL Y SOLER — without doubt, one of the able systematists among the Spanish botanists who worked on Philippine flora. He was the first and only Spaniard, doing botanical work in the Philippines, who recognized the absolute necessity of comparing his botanical material with the type specimens or with authentic material in the various European botanical institutions, before venturing to describe his specimens as new to science. He was born in Barcelona April 1, 1842. He first came to the Philippines in October 1871 as inspector general of the forestry department. On his travels to Mindanao, he investigated the exuberant flora of the regions, and gathered much material for his "Memoria sobre el ramo de montes en las islas Filipinas" (1874) III, 1456. He left the country in 1873 due to ill health, but returned in 1876 to become the chief of the "Comision de la Flora Forestal de Filipinas". In October 1882, he was commissioned by royal order to examine the Philippine materials in herbaria at Kew, British Museum, Leiden, Paris, and Madrid; a result of this study was the publication of "Phaneoramae Cumingianae Philippinarum". From Madrid he took a set

of about 2,000 of the collections of the "Comision de la Flora Forestal de Filipinas," under his own numbers, for critical study at the Kew Herbarium, and published the last master work — "Revision de plantas vasculares Filipinas" in 1886. He died in Manila on July 28, 1889. His publications are numerous<sup>37</sup>, no doubt an offshoot of his vast collections numbering more than 4,000.

1874-75 — HENRY NOTTIDGE MOSELEY — a zoologist of the famous world expedition on the 'Challenger', 1872-76. He was in the Philippines from October 1874 to February 1875. He collected in Zamboanga, Mindanao, October 23-25; Iloilo, Panay, October 28-30; Manila, November 4-10; after his trip to Hongkong, he returned to Manila and collected, January 11-14, 1875; Cebu, January 18-24; Camiguin island, January 26; Zamboanga, January 30 to February 2; Basilan, February 4-5. His botanical materials are distributed among different European herbaria: Kew, British Museum, Berlin, Cambridge, Leningrad, etc.; his orchids are at Reichenbach herbarium in Vienna.<sup>1</sup>

1874-75 — JOSEPH BEAL STEERE<sup>1</sup> — an American ornithologist who traveled in South America, China and Formosa, the Moluccas and the Philippines in 1874-75 and 1887-88. On his bird collection trips in the Philippines, he also collected ferns. The latter was named and reported by Christensen, Harrington and Copeland. Steere is the author of fifty new species of Philippine birds. He wrote several articles on his trips.

1875 — A. F. ANDREA — a captain in the mercantile marine. While visiting the Philippines in 1875 he collected

- plants, which he later presented to the Copenhagen herbarium.
- 1879-81 - 1883-85 — ALFRED MARCHE — a French explorer and collector of mainly ethnographical, anthropological, and zoological materials. He traveled extensively in the Philippines. His first voyage to the Philippines was in 1879-81, and the second voyage in 1883-85. According to van Steenis-Kruseman,<sup>1</sup> Marche's 450 numbers of Philippine plants are deposited at the Paris herbarium.
- 1879-81 — J. MONTANO — a French anthropologist who made a voyage to the Malay Peninsula, Borneo, and the Philippines. He arrived in the Philippines at the end of July 1879; starting from Manila he went to Balanga, Mt. Mariveles, Bataan; then to Albay province and Cagraray island, staying there for about a month and a half. He was in Soulou (Sulu) from November 15, 1879 to January 18, 1880. He later left for Borneo and returned to the Philippines via Jolo, where he was taken ill. He traveled next to Davao, and climbed Mt. Apo, April 11 to November 3; then to Butuan and Surigao, and Lake Mainit and other places, November 1 to March 24, 1881, after which he returned to France. He collected plants and wood specimens for the Paris museum.
- 1880 — RICHARD BOXALL — an English botanical collector in the employ of an English firm Hugh Low & Co., collecting plants of horticultural value, particularly orchids. He visited the Malay Peninsula, Borneo and the Philippines. His Philippine orchid collections are deposited at the Reichenbach herbarium in Vienna. *Vanda boxalii* Reichb.f., *Vanda lamella* Lindl. var. *boxalii* Reichb.f., and *Phalaenopsis boxalii* Reichb.f. were named after him. The first specie is very common in San Marcelino, Zambales.
- 1882 — CARL ROEBELEN — a German horticulturist in the employ of the English firm Messrs. Sanders & Sons, St. Albans. He collected live orchids for this firm. Herbarium specimens were prepared from these orchids.
- 1882-83 — JOSE SAINZ DE BARANDA — collected botanical specimens during the stint of Sebastian Vidal in Europe 1882-83. He was the acting director of the Bureau of Forestry and at the same time was in charge of the Botanical Garden in Manila. His collections carry Vidal's numbers. *Vaccinium barandanum* Vidal was named after him.
- 1881-96 — LEON MA. GUERRERO — the first Filipino graduate of pharmacy at the University of Sto. Tomas. He headed from 1923-35 the Department of Botany of the Bureau of Science, after the retirement of Director Merrill. He conducted extensive surveys of medicinal plants of the Philippines and published several papers<sup>33</sup> based on information gathered during the surveys. He built a herbarium of his own, the specimens of which were for the greater part collected by himself. Unfortunately his private herbarium was completely destroyed during the liberation of Manila in February 1945.
- 1882 — OTTO KOCH — a nephew of Dr. A. V. Schadenberg. He was a resident of Cebu; while off duty as consul, he collected plants in Mindanao.
- 1884-85 — W. MICHOLITZ — an orchid collector in the employ of the firm of J. Sanders & Sons. He was in the Philippines in 1884-85<sup>1</sup> (no exact date

- is given). *Phalaenopsis micholitzitii* Rolfe was named after him.
- 1885 — ALEXANDER V. SCHADENBERG — a German ornithologist. He made several explorations in the Philippines in 1876-79, 1881, and 1885<sup>1</sup>. His last exploration here was supposed to be more botanical. He visited Luzon, the Negrito regions, Panay, Guimaras and Negros, Davao, Mindanao and Sulu Archipelago.
- 1885 — RAMON JORDANA Y MORERA — stayed some years in the Philippines as an inspector of the Bureau of Forestry. He took advantage of this tour of duty to travel and collect plants. His publication "Bosquejo geografico..."<sup>39</sup> was based on data obtained here. No record is available of the exact date he was here.
- 1892 — ALFRED HART EVERETT — an English collector who mainly gathered zoological material in Borneo, Celebes, etc. According to van Steenis-Kruseman,<sup>1</sup> Everett collected botanical specimens in Balabac and Palawan in 1892; and in Mindoro, and Laguna de Bay, in 1895.
- 1894-95 — EUGENE LANGLASSE — a horticulturist who traveled in Cochinchina, the Malay region, the Philippines, and later in Mexico and Colombia. He was in the Philippines from October 1894 to January 1895 — visited Pagsanjan, Paete, Botocan falls, Majayjay, and Mt. Banajao. Most of his plants are deposited at the Paris Museum.
- 1895-96 — JOHN WHITEHEAD — an English ornithologist who, incidentally, collected plants. He was in Mindanao October 1895; and Mt. Halcon, Mindoro and the highlands of Mt. Province (Lepanto) in 1896. His plants from the Philippines were studied and reported by Rendle.<sup>40</sup>
- 1901 — JOSE FLORENCIO QUADRAS — a Spanish forester, associate of Sebastian Vidal in the early twentieth century. Most of his plant collections during Vidal's regime carry Vidal's numbers. Late in 1901, he collected in Zamboanga and Dinagat island. Quadras was better known for his mollusk collections in the Philippines, now deposited at the Madrid Museum.

BOTANISTS AND/OR PLANT COLLECTORS DURING THE AMERICAN  
REGIME AND UNDER THE REPUBLIC OF THE PHILIPPINES

- ADDURU, MARCELO — Bureau of Forestry and Bureau of Science.
- AHERN, GEORGE PATRICK — organized the Bureau of Forestry and founded the School of Forestry in 1910. Many forestry employees under him collected for this bureau and the Bureau of Science.
- ALCASID, GODOFREDO — a zoologist of the National Museum. He also collects plants. Most of his plants carry the PNH numbers.
- AÑONUEVO, P. — taxidermist of the National Museum. He collected in Mt. Pulo, Luzon, and one year (1950) in Mindanao for Mr. K. J. Pelzer.
- BAKER, CHARLES FULLER — came to the Philippines in 1912, and succeeded Dr. Copeland as second dean of the U.P. College of Agriculture. Although an entomologist, he collected numerous fungi.
- BARNES, P. T. — was a botanical collector for the Bureau of Forestry, 1903-04. He collected in Lamao, Bataan; Benguet, Mt. Province; and in Masbate.
- BARTLETT, H. H. — professor and director of the Botanical Garden of the University of Michigan. He came to the Philippines in 1935, and again in 1940. He collected plants at Dalupiri and Babuyan islands, and Bukidnon, Mindanao.
- BEYER, WILLIAM — while a student at the University of the Philippines, collected plants of ethnobotanical value in the Ifugao regions for the National Museum, two summers.
- NORDEN, THOMAS E. — was a school teach-



- er, who later joined the Bureau of Forestry as botanical collector. He collected in Bataan, Luzon, 1903-04; later under the For. Bur. series. *Dryopteris bordenii* Christ and *Cyclostemon bornei* Merr., are named after him.
- BRITTON, BARBARA B. — a Fulbright Fellow in the Philippines, 1952-54. She collected in Luzon, Mindoro, Negros, and Mindanao; about 500 numbers deposited at herbaria of the University of the Philippines, Leyden and the United States.
- BROWN, W. H. — joined the Bureau of Science in 1911, and stayed there until his retirement in 1937. He was professor of botany at the University of the Philippines; later succeeded Merrill as Director of the Bureau of Science. He is author of many botanical publications: "Useful Plants of the Philippines", 3 volumes; "The vegetation of Philippine mountains". Bur. Sci. Publ. No. 13 (1919) 1-434, t. 1-41.
- CANICOSA, F. — a botanical collector of the School of Forestry, Los Baños. His collections are under Bur. For. series, Philip. Nat. Herb.
- CASTRO, ARTURO P. — on the zoological staff of the National Museum, assigned to the Chicago-Philippine Expedition headed by Dr. Harry Hoogstraal; collected plants in 1946-47, with M. Celestino and G. Alcasid.
- CLEMENS, MARY S. — a botanical collector of note. She traveled mostly with her husband, Chaplain Joseph Clemens. They collected extensively in Borneo and New Guinea. She collected in the Philippines as early as 1905, in Lanao, Mindanao, Jolo and other parts of the Philippines. For details of their trips, see van Steenis-Kruseman.<sup>1</sup>
- CONKLIN, HAROLD C. — an anthropologist, with a Ph.D. from Yale University; author of papers on anthropology, linguistics, and ethnobotany. He collected plants in Palawan; and intensively in Mindoro, and in Ifugao country in the Mt. Province. His study sets are at Harvard herbarium and Philippine National Herbarium; duplicates with the United States National Herbarium and University of Michigan Herbarium. We are awaiting his publication of lengthy papers on "Ethnobotany of the Mangyans, Mindoro" and "Ethnobotany of the Ifugaos".
- CONVOCAR, PASCUAL — botanical collector of the National Museum; collected at Mt. Isarog, Camarines Sur; and with Dr. Mendoza in Butuan, Mindanao in 1949; and other regions of Luzon. His collections are with the Philippine National Herbarium.
- COPELAND, EDWIN B. — see under explorations. Bibliographical data in Nat. Res. Council Philippines Bull. No. 7, (1935) 642-646.
- CURRAN, HUGH McCULLOM — forester in the employ of the Bureau of Forestry, 1906-13; author of some papers on Philippine woods; discoverer of Doña Aurora (*Mussaenda philippica* A. Rich. var. *auro-rae*), a beautiful ornamental, now grown in many places of the world. The genus *Currania* Copel. and many species are named after him. He traveled extensively in the Philippines and collected numerous plants. Bibliographical data — Nat. Res. Council Philip. Bull. No. 7 (1935), 646-47.
- DANSEREAU, PIERRE — a Canadian, with Doctor of Science degree from Geneva; professor of botany, University of Michigan. He came to the Philippines in 1953; collected plants at Mt. Makiling, Luzon; and along the road from Baguio to Mt. Polis, and Mt. Sto. Tomas, Mt. Province. Most of his collections are in the University of Michigan Herbarium.
- DAY, ALICE W. — the daughter of the Secretary of the Interior of the Philippine government. She collected orchids (botanicals) in the Mt. Province. *Dendrobium aliciae* Quis. is named after her.
- EDAÑO, GREGORIO E. — botanical collector of the Bureau of Science, and later of the National Museum, since 1916. Next to Maximo Ramos, he collected the most number of plants in the Philippines, and traveled from north (Batanes and Babuyan islands) to south (Sulu Archipelago and Tawi-tawi islands). His collections are numbered under the Bureau of Science and the Philippine National Herbarium series. His specimens are distributed in many herbaria of the world. Before his death on May 10, 1960, he took several trips on his own expense. Many species are named after him, as *Cyathea edanoi*, Copel., *Cryptocarya edanoi* Merr., etc.
- ELMER, A.D.E. — a botanist and famous plant collector. He came to the Philippines in 1904; died on April 17, 1942. He was first employed at the Bureau of Science, until 1905. He made extensive travels in the Philippines, even during the rainy season, and collected in Borneo. He was the editor of "Leaflets of Philippine Botany," 10 volumes, in which more than 1,500 new species and a few new genera are described by him and other specialists of the world. He collected many duplicates of each number, which he sold to large herbaria of the world. Bibliographic data in Nat. Res. Council Philip. Bull. No. 7 (1935) 805-808; and Obituary in the Philip. Journ. Sci.
- EVERETT, HARRY DAY — joined the Bureau of Forestry in 1905. He collected in Negros under the For. Bur. series. *Ficus everettii* Elm, *Lasianthus everettii* Merr., etc. are named after him.
- FENIX, EUGENIO — was an overseer of forests, Bureau of Forestry, later in the

- employ of the Bureau of Science. With R. C. MacGregor, ornithologist of the Bureau of Science, he collected plants in Batan, Sabtan, Babuyan, Camiguin and Y. Ami islands, in 1907. With M. Ramos, collected in Samar; Bukidnon, Mindanao; and regions of Luzon, in 1916; and again in Meycauayan, Bulacan, in 1938. After leaving the government service, he collected plants for the Arnold Arboretum, 1938. He also collected plants for the "Species Blancoanae."
- FOX, ROBERT B. — chief of anthropology division of the National Museum. He collected extensively in Mt. Pinatubo, Zambales; 1947-48, for his ethnobotanical paper "The Pinatubo Negritos (their useful plants and material culture)", published in *Philipp. Jour. Sci.* 81 (1952) 173-391, t. 1-18, f. 5. He also collected in the island of Polillo, 1948-49; and in Palawan, 1950-51 and 1962-63, for his paper—"Ethnobotany of Tagbanwas" (MS).
- FOXWORTHY, F. W. — was botanist of the Bureau of Science, 1906-11, and the Bureau of Forestry, 1911. He worked in 1918 as Research officer, Forest Department of the Malay Peninsula, 1918-32. He is author of many papers on forestry and wood-anatomy. He collected from 1906 to 1917— plants numbered in the Bureau of Science and Bureau of Forestry series. Biographical data in *Malay For.* 13 (1950) 178-179.
- GATCHALIAN, F. S.—formerly on the staff of the National Museum. He collected in 1951-52 in Mindoro and Samar.
- GARCIA, REGINO—served during the Spanish regime with the Bureau of Forestry, 1877-98; joined the American civil service in 1902. He collected plants in Luzon and Mindoro and in Palo, Leyte, 1903.
- GATES, FRANK C. — ecologist, Ph. D. from the University of Michigan. He taught at the U.P. College of Agriculture, 1912-15. His plant collection is under his name and under the Bureau of Science series; most of these are deposited at the Herbarium of the Museum of Natural History, Chicago.
- GLEASON, HENRY A.—botanist on the staff of the New York Botanical Garden. He collected plants in the Philippines from October to December 1913 at Mt. Makiling, Pagsanjan, Laguna; Bombon, Taal volcano, Batangas; near Zamboanga, Mindanao.
- GRAFF, PAUL W. — mycologist on the staff of the Bureau of Science; collected mostly fungi, numbered under the Bureau of Science series.
- GUERRERO, LEON Ma. — botanist-pharmacist. He collected plants during the Spanish regime for his private herbarium; joined the Bureau of Science, 1916-33, as botanist, and later as head of the division of botany, until his retirement in 1933; undertook a survey of the medicinal plants of the Philippines. Most of his publications are on medicinal plants.
- GUTIERREZ, HERMES — joined the National Museum as botanical helper and collector of the Philippine National Herbarium. He collected in Sorsogon and Palawan; and was with me during the expedition to the Batanes and Babuyan islands in March-May 1961. His collections individually and jointly are numbered in the *Philipp. Nat. Herb.* series. He is now at Harvard University, specializing in systematic botany.
- HALLIER, JOHANN G. — a German botanist who was assigned to the first scientific Borneo expedition, 1893-94. He came to the Philippines. from Hongkong, arriving in Manila on May 24, 1903; collected plants in Camarines Sur and Camarines Norte, Mt. Iriga; Manila and environs (Nov.); Los Baños, Laguna; Olongapo, Subic, Zambales, Jan. 1904; Mindoro, Romblon; Masbate; Cebu; Basilan; Zamboanga, Mindanao (Feb. 1904).
- HERRE, ALBERT W. — ichthyologist. He worked with the Bureau of Science, 1920-28, as head of the Division of Fisheries; returned to the Philippines after liberation as ichthyologist of the U.S. Fish and Wildlife office. For a hobby he collected lichens, describing some new species of these in the *Philippine Journal of Science*.
- HITCHCOCK, ALBERT S. — came to the Philippines in 1920; studied and collected grasses. He was agrostologist of the U.S. National Herbarium. He travel extensively in the Orient, Africa and America. He is author of many agrostological papers.
- HOOGSTRAAL, HARRY — a zoologist, leader of the Chicago-Philippine Expedition in 1946-47. Edaño did most of the botanical collecting; also Alcaid, Castro, and Celestino. Report of this expedition is in *Fieldiana Zool.* 33. No. 1 (1951) 84 pp. t. 1-7, text figs. 1-7.
- HOSOKAWA, TAKAHIDE — a Japanese botanist, who visited in 1933-38 the islands of Micronesia, Palau, Yap, Truk, Ponape, Kusaie, Marianas and Marshall; and in September 1936, Mt. Apo, Mindanao.
- KARGANILLA, EDILBERTO — an employee of the Bureau of Science herbarium; collected plants in Mt. Makiling, Laguna during the summer of 1934.
- KIENHOLZ, RAYMOND — was professor of botany, College of Liberal Arts, University of the Philippines, 1922-24. During the summer of his stay here he studied and collected plants on the beaches of Mindoro, and southern islands.
- KLEMME, WILHEIM — a German forester, educated at Cornell University, U.S.A. He was employed at the Bureau of Forestry, Manila, 1902-18. He collected plants, numbered under the *Bur. For.* series in Quezon province, etc. *Dysoxylum klem-*

- mei Merr*, and other Philippine plants are named after him.
- LAGRIMAS, MARTIN** — forester and wood technologist of the Bureau of Forestry; collected plants from 1948 to the present, in Mt. Makiling, Famy, Laguna; Infanta, Quezon and other regions of the Philippines. His collections are numbered under the P.N.H. series.
- LAMBERT, WILLIAM HENRY** — forester of the U.S. Forest Service. He made military expeditions into the interior of New Guinea; and in Mindoro, Philippines, in 1945. His specimens are deposited at the U. S. National Herbarium.
- LOHER, AUGUST** — a German pharmacist, resident of the Philippines since 1889. He collected extensively in the Philippines, mostly in the mountains of Rizal, Nueva Viscaya, Polillo island; Lake Mainit and Surigao in Mindanao. Most of his specimens are deposited at the Kew Herbarium; the orchids are still unidentified. He himself wrote a few articles. Articles published by many botanists are based on his collections.
- LYON, WILLIAM S.** — was a gardener of the Philippine Bureau of Agriculture, 1902-6. He collected mostly orchids identified by Oakes Ames of Harvard University. He had an orchid collection in his garden at Sta. Ana, Manila. *Mucuna lyonii Merr.* and *Dendrobium lyonii Ames* are named after him.
- MABESA, CALIXTO** — forester of the Bureau of Forestry, collected plants under the For. Bur. series. *Clerodendron mabesae Merr.* is named after him.
- MACCLURE, FLOYD A.** — specialist on bamboos, formerly professor of Canton Christian College; since 1936 Senior Botanist of the U.S. Plant Industry. He came to the Philippines to collect in Baguio and other localities. Duplicates of his collection are deposited at the U. S. National Herbarium and New York Botanical Garden.
- MACGREGOR, RICHARD C.** — an ornithologist of the Bureau of Science. While hunting birds in many regions of the Philippines, since 1905 until his retirement (1939?), he also collected plants from Batanes and Babuyan islands in the north, and Palawan in the south. Bibliographical data—in Philip. Jour. Sci. 63 (1937) 359-361, t. 1.
- MEARNS, EDGAR A.** — a prominent zoologist and former U.S. Army surgeon, 1883-1909. He collected plants in Baguio and environs and in Zamboanga, Mindanao, May 1906; in Calapan, October 1906 and Mt. Halcon, Mindoro in October-December 1906. He was in Batan and Fuga islands in June 1907. The genus *Mearnsia*, and some plant species are named after him.
- MENDOZA, DEMETRIO R.** — formerly a ranger and forester of the Bureau of Forestry, 1928-41; chief botanist of the National Museum since 1947. His collections were numbered formerly in the Bur. For. series; since 1947, these are with the PNH series. He collected in Luzon (Laguna, Rizal, Quezon) and in Surigao and Agusan (Feb.-March 1949).
- MERRILL, ELMER DREW** — an agrostologist of the U.S. National Herbarium, 1899-1902; botanist of the Bureau of Science 1902-23; Director of the Bureau of Science, 1919-23; Dean, College of Agriculture, University of California, 1924-29; Director, New York Botanical Garden, 1929-30; Director of the Arnold Arboretum, Jamaica Plain, Mass. and Administrator of Botanical Collections of Harvard University 1930-56. He was considered the most outstanding taxonomist even before his death. Complete bibliographic data—see Quisumbing's paper in Philip. Jour. Sci. 85 (1956) 171-188 t. 1. He published numerous papers — see partial list in his Enumeration, Volume 4 (1926) 205-208.
- MERRITT, MELVIN L.** — a forest officer of the Bureau of Forestry, 1905-09. He collected particularly at Mt. Halcon, Mindoro, June 1906; and Mt. Pulog, Mt. Province, January 1909.
- MEYER, ROBERT** — a plant collector of the Bureau of Forestry. He collected at Mt. Mariveles, November 1904; and Lamao Forest Reserve, Bataan (December 1904-June 1905). *Alangium meyeri Merr.* and other species are named after him.
- MILLSPAUGH, CHARLES F.** — a physician, and chief curator of botany, Chicago Museum of Natural History. He visited in 1911-12 Honolulu, Japan, Shanghai, Philippines, Buitenzorg, Burma, Calcutta, India, Ceylon. During his nine-day stop in the Philippines he collected plants in Los Baños.
- PANCHO, JUAN V.** — botanist of the College of Agriculture, U.P.; collected plants about 1953 onwards, in Mt. Makiling, Laguna; Baguio, Bontoc, Banaue, Mt. Polis, Mt. Data, Mt. Province, Mt. Apo, Mindanao. His collections are numbered in the Philippine National Herbarium, National Museum series.
- PANIZA, I. P.** — geologist of the National Museum, also collected plants in Mindoro and Panay.
- PELZER, KARL J.** — a visiting economist from the United States, who was head of an expedition to Mindanao and Jolo (March to November 1950). See Añonuevo, the collector.
- PHILIPPINE NATIONAL HERBARIUM**, National Museum—organized in 1939 under former Director Eduardo Quisumbing, who retired November 25, 1961. Quisumbing wrote a paper "Botanical Expeditions in the Philippines" (1946-1958) in Proc. Eighth Pacific Science Congress, 4 (1957) 501-543, 1 map.

- QUISUMBING, EDUARDO — botanist, former Director of the National Museum; in the service of the government since 1918; retired November 24, 1961. He read a paper, entitled "Flora of the Philippines", National Science and Technology Week (December 2-8, 1963) (NSTW 12/6/63-TP39) 35 pp. Bibliographical data: Nat. Res. Council Philip. Bull. No. 7 (1935) 713-314; Fl Malesiana Ser. I, Vol. 1 (1950) 420. He collected extensively in the Philippines; also during his trips to Malay Peninsula, Siam (Thailand), Java, New Guinea (Australian), Borneo, California, Jamaica Plain, Mass., U.S.A.
- RAMOS, MAXIMO — the most outstanding botanical collector of the Philippines. He joined the Bureau of Science in 1904, and died of malaria while collecting in Buayan, Cotabato, Mindanao, in 1932. His collection trips extended from the Batanes and Babuyan islands to the Sulu Archipelago, and as far as Borneo. His huge collections enriched our knowledge of the Flora of the Philippines. The genus *Ramosia* and many species of plants have been named after him. He collected most of the plants for Merrill's interpretation of Blanco's species—"Species Blancoanae".
- REILLO, JUAN — a collector of the Bureau of Science. He accompanied Ramos on trips to Rizal province. *Oberonia reilloi* Ames is named after him.
- REINKING, O. H. — plant pathologist and professor at the College of Agriculture, U.P. He collected fungi in the Philippines; these are deposited at the Philippine National Herbarium.
- RITCHIE, JOHN W. — a school teacher of the former Bureau of Education, 1902-07. He collected mainly in Quezon province; also in Guimaras island, under the For. Bur. series. *Bruguiera ritchiei* Merr. is named after him.
- ROBINSON, CHARLES BUDD — formerly with the New York Botanical Garden. He worked with the Bureau of Science from August 1911 to December 1912. He was murdered December 5, 1913 in Ambon, Moluccas while collecting for Dr. Merrill for the revision of the Rumphian plant collection. He is the author of "Alabastra Philippinensia" and many other papers. He collected mostly in Luzon (Mt. Makiling), and Polillo island. He visited Singapore, Java, Celebes, etc.
- ROSENBLUTH, R. — forest officer of the Bureau of Forestry; collected in Mindoro, 1908; and Masbate, 1909. *Diospyros rosenbluthi* Elm., is named after him. Collections are in For. Bur. series.
- SALVOSA, FELIPE M. — forester, Bureau of Forestry; collected plants in Mt. Makiling, Laguna; Polillo and Palasan islands. His Ph.D. thesis in the United States was on "Rhizophoraceae." Collections are in For. Bur. series.
- SANTOS, JOSE K. — cytologist, and former head, Department of Botany, U.P.; collected plants in Baguio and vicinity summer of 1917. Collections are in the Bureau of Science series. *Saurauia santosii* Merr. is named after him.
- SANTOS, JOSE VERA — botanist-agrostologist; head, Department of botany, College of Liberal Arts, U.P. He collected plants in Mt. Makiling and in Basilan; Solana, later in Batan island, Dalupiri island, 1955; Cagayan, Laoag, Ilocos Norte, Mt. Polis, Mt. Sto. Tomas, Mt. Province; Mt. Tirad, Ilocos Sur; Reina Mercedes, Cauayan, Isabela; Baler, Quezon; Bongabong, Nueva Ecija; Binagbag, Sta. Cruz, Iba, Zambales; Calamba, Los Baños, Laguna; Puerto Galera, Calapan, Mindoro; Panay; Guimaras; Negros; Bohol; Mindanao: Cagayan de Oro, Misamis Or., Bukidnon, Zamboanga, Sulu; Turtle island, etc. Collections are deposited in the University of the Philippines Herbarium; duplicates in Leiden, Phil. Nat. Herb., U.S. Nat. Herb., Univ. of Michigan Herb., and Arnold Arboretum herbarium.
- SCRIBNER, F. L. — agrostologist, U.S. Department of Agriculture. He was the first Director of the Philippine Bureau of Agriculture, 1901-04. He collected grasses in the Philippines. *Gigantochloa scribneriana* Merr. is named after him.
- SEVRENS, O. F. — a school teacher of the Bureau of Education, 1912-13. He collected plants mostly in Benguet.
- SHAW, WALBERT R. — algalogist. He was professor of botany, College of Liberal Arts, U.P., 1906-22. He collected primarily algae, of the Volvaceales group, around Manila. It is doubted that duplicates of these exist.
- SINCLAIR, JAMES — curator, Singapore herbarium. He collected in the Philippines, with Edaño, in June-July, 1958; Antipolo, Rizal; Mt. Makiling, Laguna; Sipocot, Camarines Sur; Baguio, Mt. Sto. Tomas, Mt. Province. Collections are in Singapore Herbarium, Philippine National Herb.
- STEEMANN, NIELSEN E. — botanist of the "Dana Expedition", 1928-30. He collected in Aparri, Ilocos Norte, May 23, 1929; Mt. Makiling, Laguna, June 20, 1929. Collections are deposited at Copenhagen Herbarium.
- STEENIS, CORNELIS GIJSBERT GERRIT JAN van — botanist, at present Director of the Rijksherbarium, Leiden, and Chief Editor of the Flora Malesiana. A well-traveled botanist, he is the author of many taxonomic, phytogeographic and other papers touching on the flora of Malaysia. Many species of orchids were named after him by J. J. Smith. Other plants so named are *Eurya steenisii* De Wit and the genus *Steenisia* Bakh.f. He visited the Philippines in 1953 as an official delegate to the 8th Pacific Science

- Congress held here. He collected plants in Manila and environs: Mt. Makiling, Laguna; along the Kennon road from Pangasinan to Baguio; road from Baguio to Bontoc (including Mt. Pauai, and Mt. Data); Mt. Polis; and Mt. Sto. Tomas, all in the Mountain province. Bibliographical data — *Flora Malesiana*, Ser. I, 1 (1950) 499-503; Suppl. I, Ser. I, 54 (1958) 89.
- STEINER, MONA LISA — botanist, a graduate of the University of Vienna. She came to the Philippines in 1938, and was employed as instructor in botany, University of the Philippines. On her own since 1940, she focused her attention to horticulture, in 1962; later published a popular book on orchids, with Davis; and another popular book on ornamentals of the Philippines. She wrote a few articles for the *Philippine Orchid Review*. She collected mainly ornamental plants for her private herbarium, which in 1955 had about 1,000 field numbers. Duplicates of the collections are deposited in the Philippine National Herbarium.
- SULIT, MAMERTO D. — former forester and dendrologist, School of Forestry; later joined the National Museum as chief botanical collector, after liberation; retired in May 11, 1956. He collected in Mt. Makiling, Laguna; Mt. Lobo, Batangas; Mt. Bulusan, Sorsogon; Samar; Guimaras island; Palawan; Mindoro, by himself and with Conklin (1952-53); and Mindanao. The early collections are in the For. Bur. series; later ones in the Philip. National Herb. series. Most of his papers are ethnobotanical in nature.
- TAMESIS, FLORENCIO — forester, graduate of Washington University. He is the first Filipino director of the Bureau of Forestry after liberation (1946). He collected plants under the For. Bur. series.
- TANAKA, TYOZABURO — a citrus specialist, came to the Philippines in 1938 as guest professor of the College of Agriculture, U.P.; and as guest scientist during the Japanese occupation. His collections of citrus species are deposited in his private herbarium at Taiwan University.
- TAYLOR, EDWARD J. — herpetologist. He came to the Philippines in 1912; from 1916-20, he was chief, Division of Fisheries, Bureau of Science. He collected plants while collecting herpetological specimens, under the Bur. Sci. series. Orchids collected by him were sent to Professor Oakes Ames of Harvard University. *Eria taylorii* Ames and *Malaxis taylorii* Ames are named after him.
- TOPPING, DAVID L. — was in the Philippines between 1903-22, as an employee of the Auditor's office and the Treasury in Manila. His interest in botanical field work took him to various places in the Philippines: Baguio and Mt. Sto. Tomas, Mt. Province, January-February, 1903; Lamao, Bataan, May, 1904. He collected mostly ferns, all identified by Copeland. Other plants were named by Merrill and Elmer; several of these are named after him.
- USTERI, ALFRED — a Swiss horticulturist-botanist, who was in the Philippines in 1902-03. He collected plants in Manila and environs; Cebu; Iloilo, Panay; Guimaras; from San Carlos to Mt. Canlaon, Negros. Duplicates of his collections are at Kew. *Selaginella usteri* Hieron, and some other plants are named after him.
- VANOVERBERGH, MAURICE — a Belgian priest, came to the Philippines in 1909. His assignments (1911-45) in various places in northern Philippines gave him the chance to collect plants, identified by Merrill and later by Quisumbing. He collected more than 3,600 numbers. The genus *Vanoverberghia* Merr. and several species are named after him. Also, he studied the Negrito and Ilocano cultures, and wrote several papers on these ethnic groups.
- WADE, HERBERT W. — leprologist-pathologist, Medical Director of Leonard Wood Memorial, Culion. He collected plants in Culion island. *Cycas wadei* Merr., endemic of Culion, and *Begonia Wadei* Merr. and Quis. are named after him.
- WAGNER, JR., WARREN H. — a navy flier of the Atlantic and Pacific fleets. In 1945 he came to the Philippines, and collected plants in Guiuan (March, 1945), and Calicoan, Samar (December 5, 1945). Duplicates of his collections, particularly ferns, are deposited in the U.S. Nat. Herb.; Copeland Herbarium, etc.
- WEBER, CHARLES M. — ex-American soldier. He collected plants in the Philippines, 1911-17. Several plants were named after him. Duplicates of his plants are found in Kew Herb., Paris Herbarium; Chicago Natural History Museum, U.S. National Herbarium, Ames Herbarium, Harvard University. He died in the Philippines.
- WENZEL, CHESTER A. — a school teacher in the early days of American occupation; later turned cattle breeder and professional plant collector. He collected extensively in Leyte and Surigao, Mindanao. *Wenzelia* genus and some other species of plants are named after him.
- WESTER, PETER J. — horticulturist of the Bureau of Agriculture. He introduced many food plants and ornamentals, and is the author of several papers on citrus, "Food Plants of the Philippines", etc.
- WHITFORD, HARRY N. — forester of the Bureau of Forestry, 1904-12. He collected in Lamao, Mt. Mariveles, Bataan; Quezon province; Negros and other regions of the Philippines. His collections carried the For. Bur. series, and partly used private

- numbers. Among his best papers are: "Studies in the vegetation of the Philippines", "Dipterocarp forests of the Philippines", "The forests of the Philippines".
- WILLIAMS, ROBERT S. — staff member of the New York Botanical garden. His early interest was ornithology; but he later branched off to bryology. He collected plants in the Philippines from November, 1903 to August, 1905. He visited Baguio and Mt. Sto. Tomas, Mt. Province; Mt. Mariveles, Bataan; Mt. Makiling, Laguna. In 1905 he traveled Mindanao, and climbed Mt. Apo; San Ramon, Zamboanga and Sulu islands. He is noted for his collections of ferns and mosses. He collected orchids for Oakes Ames of Harvard University.
- YAMAMOTO, YOSHIMATSU — formerly of Taihoku Imperial University (Formosa); studied under Merrill in the University of California, and in Kew herbarium. For his studies on the *Menispermaceae*, he went on a study tour to Java, Sumatra and Borneo in 1939, and Hainan in 1940. He was stationed in Manila in 1942-43, during the Japanese occupation, to study Philippine *Menispermaceae*.
- YATES, HARRY S. — mycologist of the Bureau of Science, 1915-20. He collected mostly fungi, in various provinces and localities. He is author of papers on Philippine fungi, published in the Phil. Jour. Sci.
- ZSCHOKKE, THEODORE C. — forester of the Bureau of Forestry, 1924-28. He is noted for his collection in Mt. Pulog, the highest mountain in the Mountain Province, Luzon. He also collected in other localities. His collections are numbered in the For. Bur. series.
- ZWICKEY, LYNN A. — came on an expedition to the Philippines, financed by the Arnold Arboretum, Harvard University and the University of Michigan, to study the flora of Lanao, Mindanao, in 1938. His collections are deposited in the Arnold Arboretum Herbarium, Gray Herbarium, University of Michigan Herbarium, and New York Botanical Garden.

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- Dr. QUISUMBING, former director of the National Museum, is currently professor and head of the horticulture department, Araneta University; and professor of botany at the University of the East and the University of Santo Tomas Graduate School.

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# BIBLIOGRAPHY OF GEOGRAPHY

ROBERT E. HUKÉ

## INTRODUCTION

THE major purpose of this bibliography is to provide a much needed tool for the use of the increasing number of students of Philippine geography. Materials of direct interest to geographers are to be found in a broad range of sources. These are not normally housed together in library facilities, nor catalogued in convenient groupings for the use of the geography student. Therefore, a working bibliography is doubly important.

The following selected list of references is divided into eight sections. The first three sections: Journals, Statistical, and Bibliographies, are designed to guide students to further sources of information. The last five sections, containing over two-thirds of the entries in the bibliography, deal with the physical and economic geography of the Philippines.

This bibliography is highly selective in the following ways:

- a.) Only publications produced in the Philippines are included. Thus, these materials should be easily and inexpensively available to students in this country.
- b.) Publications produced prior to the Japanese Occupation are not included, as such publications are not now easily available. To include all early publications would, in part, duplicate work covered by other available sources.
- c.) No attempt has been made to produce a complete index of the Journals listed under Section A. Rather, only selected articles of special interest to geography students have been indexed. In periodicals such as *The Fookien Times Yearbook*, which often carries valuable but similar articles, year after year, with the same titles but different authors, only the most recent available issue has been indexed.

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## BOOK REVIEWS

*Plants and the Migrations of Pacific Peoples: A Symposium.* (publication resulting from The Tenth Pacific Science Congress). Edited by Jacques Barrau. Bishop Museum Press, Honolulu, Hawaii 96819, 1963. 13 papers and 136 pp. with 31 figs. \$4.00.

1 Introduction by Jacques Barrau; Movement of People and Ideas across the Pacific by George F. Carter; Prehistoric Voyages as Agencies for Melanesian and South American Plant and Animal Dispersal to Polynesia by Thor Heyerdahl; Vernacular Plant Names in Melanesia; Some Examples from Northern New Caledonia by A. G. Haudricourt; Proto-Melanesian Plant Names by Ann Chowning; Correlations of Plant Patterns and Population Migration into the Australian New Guinea Highlands by R. G. Robbins; The Role of Pandanus in the

The book under review consists of thirteen papers,<sup>1</sup> each directly or indirectly attempting to answer questions on the geographical origin of the peoples and plants of the Pacific Islands and the ways in which these were transported and diffused.

Being concerned with people and plants, the subject *Plants and the Migrations of Pa-*

*Culture of the Marshall Islands* by Benjamin C. Stone; Appendix: *Marshallese Cultivar Index and Distribution of the Names by Atoll* by Benjamin C. Stone; *The Migration of Rice from Mainland Southeast Asia into Indonesia* by J. E. Spencer; *Rice Cultivation of the Ancient Mariana Islanders* by Ichiro Yawata; *Sweet-Potato Variation and its relation to Human Migration in the Pacific* by D. E. Yen; *The Origin of the Sweet Potato Plant* by Ichizo Nishiyama; *The Oceanian-African Hypotheses and the Sweet Potato* by Harold C. Conklin.

*cific Peoples* particularly belongs to the field of ethnobotany. However, in the study of processes having to do with the migrations of peoples and plants, there is also involved not only the discipline of ethnology and botany but also anthropology, linguistics, genetics, and even agronomy and horticulture. Scientists working in the fields of plant introduction and acclimatization, and plant breeders will find in the papers being reviewed materials of historical and current value to their respective lines of work. Philippine researchers, especially, will be glad to know that authorities who previously worked in the Philippines, like the late Elmer Drew Merrill, Robert B. Fox and Harold C. Conklin, have been cited. As expected, a number of the plants mentioned and discussed under the various theses presented, from the standpoint of origin and migration, are among the important crops or plants of the Philippines; for example, rice, sweet potato, coconut, sugar cane, banana, cotton, pandan, several species of *Dioscorea* and the gumamela (*Hibiscus rosasinensis*).

In regard to the geographical origin of peoples and plants, it seems some theories or views and methods of analyses, held valid for a long time, would need re-examination or revision in the light of new evidence. The paper of Carter, for instance, states: "The study of historical cases of contact and diffusion suggests that transfer of knowledge is a slow and uncertain business. Intermittent or passing contacts lasting over centuries need not result in the transfer, while settlement on the other hand, may result in a rapid introduction of numerous culture items . . ."

"With respect to plants, there is no guarantee that major economic plants will be the most easily transferred. The adoption of new plants is no simple matter . . . It requires the adoption of a whole complex of knowledge about the plants ecological requirements, and often also about the human usages of the plant. . . Considering how much we are learning about the rate of change in an organism through genetic drift, and with the accompanying rapidly increasing time-depth for Pacific archaeology, it seems the past assumption about the possibility of man's having introduced plants which have varied somewhat in their new homelands needs re-examination."

" . . . the assumption that man could not deliberately, easily, and regularly have crossed the Pacific early enough to account for the plant and cultural phenomena observed in that area is seen to be only an assumption. . . The Asiatic priority in centerboards and fore-and-aft-rigged sails is the probable cause of Asiatic influence on America — influences which greatly outweigh European ones — despite the fact that Pacific distances are immensely greater than Atlantic distances."

One subject which has become more controversial, the book mentions, is that on the origin of some Pacific cultivated plants such

as sago palm, *feh* banana, noble sugar cane, and *Saccharum edule* Hassk., a cane with edible abortive inflorescences. Whereas Vavilov considers Indo-Malaysia as the center of origin of these plants, the opposing view holds that New Guinea is their place of origin. Moreover, while the coconut might very well have originated from the Pacific area, this origin still remains to be settled.

Pacific ethnology of the period following World War II, or beginning the year 1947, saw rapid development when the following events took place:

1. The publication in 1947 of the book *The Evolution of Gossypium* by Hutchinson, Silow and Stephens, which contains the results of a biosystematic survey of cotton and shows the value of such a survey as a method of ethnobotany;
2. In 1947, also, the successful crossing of the Pacific, from South America to Polynesia, by Thor Heyerdahl on a simple *balsa*;
3. This courageous feat forced many ethnobotanists to reconsider some of the then accepted dogmas concerning human migration in the Pacific. It is reported that Heyerdahl's expedition is the main reason for the publication of Elmer Drew Merrill's book, *The Botany of Cook's Voyages and its Unexpected Significance in relation to Anthropology, Biogeography and History*, which in itself is considered a milestone in the development of modern Pacific ethnobotany;
4. A fourth milestone is the essay of Harold St. John on the "Origin of the Sustenance Plants of the Polynesian," which was presented in 1953 at the Seventh International Botanical Congress;
5. In the same year, the publication of I.H. Burkill's lecture at the Linnean Society of London on the subject, "Habits of Man and the Origin of the Cultivated Plants of the Old World;" and
6. The period 1954 to 1961 saw the growth of knowledge on Pacific economic flora as a result of cooperative work among anthropologists, linguists and botanists.

NEMESIO B. MENDIOLA

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**SOUTH EAST ASIA: A Social, Economic and Political Geography.** By Charles A. Fisher. xix and 831 pp. with maps, tables, bibliography and index; Methuen and Company, Ltd., London; E. P. Dutton and Company, Inc., New York, 1964. \$15.95.

Written by a capable British geographer who has specialized in Southeast Asia since World War II, this book includes the area south of China and east of India-Pakistan. Well-written and documented with hundreds of footnotes, it is the longest and easily the most complete geographic treatment, of the area covered, that has yet appeared. The 110

maps are well-planned and properly executed. Both the maps and the 108 tables complement the text.

The author feels that the most effective level at which a geographical synthesis can be made is that of the political unit, rather than that of the natural region, for it is primarily as a member of a nationally organized society that modern man comes to terms with his physical environment. Although much physical and historical material is included, such material is introduced primarily in order to assist the reader to understand the present-day social, economic and political geography of the area treated.

After an opening section that is concerned with Southeast Asia as an entity, there is a more lengthy treatment of Indonesia (202 pages) and Malaya than of the other countries, with the fewest pages devoted to Thailand and the Philippines, respectively. However, the 45 pages devoted exclusively to the Philippines contain a considerable body of information and some penetrating, worthwhile analysis.

The author concludes his work with a thirty-page bibliography which is generally good, in some ways outstanding. But in view of its length it is weak with respect to the contributions of American and Filipino geographers in American and Philippine periodicals. (There is no listing from *The Philippine Geographical Journal*, for example.)

This is a book of real value to any professional social scientist concerned with Southeast Asia, or any part of it. It ought to be used by government officials of Southeast Asian countries and by embassy personnel stationed in Southeast Asia. Although hardly appropriate for the beginning college student, it can be used effectively for upper level and graduate courses. Unfortunately, the list price is high; some persons who ought to purchase the book will, no doubt, feel unable to afford it.

ALDEN CUTSHALL

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## P. G. S. NOTES

### TALBOTS CONDUCT NATURAL RESOURCES SURVEY

Dr. and Mrs. Lee M. Talbot arrived in Manila last May 13 to conduct a survey on the status of our renewable natural resources and evaluate problems connected with their management and conservation. Their program of work in the Philippines includes consultations with individuals and government departments having to do with resource utilization, and visits to parks and wildlife of related interest.

Dr. Talbot is an experienced ecologist and geographer. He has conducted researches, surveys and assessments on natural resources ecology and management covering the continents of Africa, Asia, Europe and America. In 1955 he made an ecological and land use reconnaissance in 22 Asian countries including the Philippines. He has held the positions of staff ecologist of the International Union for the Conservation of Nature (IUCN), director of the East African Ecological Research Project, consultant in Wildlife and Land Use Ecology to the United Nations Special Fund, field consultant on Ecology and Conservation to the Pacific Science Board of the National Academy of Science-National Research Council.

Mrs. Talbot, on the other hand, is a biologist with experience in national parks, conservation, education, and ecological research and reconnaissance. From 1955 through 1959 she was director of the Conservation Education Program of the U. S. National Parks. Since then she has worked with her husband in Africa and America on ecological research and land use reconnaissance.

The International Commission on National Parks (ICNP) of the IUCN designated this husband-and-wife team to conduct a similar survey in five other Asian countries: Cambodia, Vietnam, Thailand, Indonesia and Malaya. They will spend not less than two months in each country.

As a project of the ICNP, the survey is designed to help Southeast Asian countries whose governments had so expressed a desire for action and assistance from international bodies specialized in conservation matters. It was prepared by Harold J. Coolidge, chairman of the ICNP, after consultation with their respective officials. Endorsed by the Executive Board of the IUCN and the Worldlife Fund, it gets financial support from the American Appeal of the Fund.

The various aspects of the project are carried out in coordination with FAO, UNESCO and the Conservation Subcommittee of the International Biological Program.

### NATIONAL RESEARCH COUNCIL CALLS FOR CONSERVATION EDUCATION

The Natural Resources Committee of the National Research Council of the Philippines recently passed a resolution requesting the Secretary of Education to include subjects on conservation of natural resources in high school and college curricula, particularly in the colleges of liberal arts, education, business administration, and in vocational and national agricultural colleges.

The subjects especially recommended for inclusion are those concerning conservation of forests, soils, water, fishes and minerals.

The resolution scored the widespread infestation of rats and other rodents, the occurrence of floods and droughts, the low yield of crops, and the decrease in quantity and quality of water, and attributed them to the wanton destruction of our watersheds, natural fauna and flora, depletion of agricultural soils, and long and continued croppings. It claimed that, though possessing one of the richest natural resources in the world, the Philippines has not seen fit to have these properly studied as to their nature, estimated as to their quantity and mapped as to their exact location. Through classroom instruction the committee hopes to have this deplorable state of ignorance about our natural resources remedied.

Although long overdue, the proposal is welcomed as a practical approach to the problems affecting our natural resources. It is constitutionally inspired: Article XIII, Section 1 of the Philippine Constitution clearly provides for the conservation of our natural resources for our patrimony. It is something which strongly deserves the support of our educators and legislators alike.

#### GERMAN GEOGRAPHER HERE FOR DOCTORATE STUDIES ON LANA O

PGS President D. Z. Rosell recently received Klaus Hausherr of Germany who came to conduct a one-year field research on Lanao for his doctorate thesis in geography. His stay here is part of the research scholarship awarded him in 1963 by the German Academic Exchange Service.

Mr. Hausherr started his studies in 1957 at Bonn University, Germany, taking up geography, history and ethnology. In 1961-62 he specialized in aerial photo-interpretation at Cornell University, Ithaca, N. Y.

It should be interesting to know about the outcome of his research, probably the first of its kind on little-studied Mindanao.

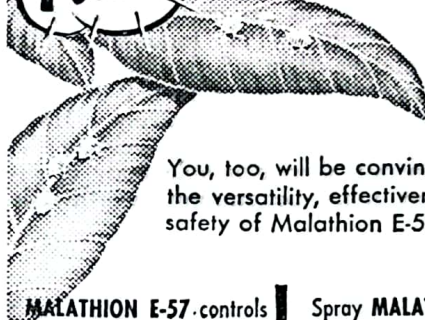
#### GEOGRAPHICAL STUDIES ON LEYTE

Dr. T. M. Burley of England (Geographical Notes, page 175, PGJ, Vol. 7, No. 3) wrote in about his current geographical research activities in Leyte. His previous topic of investigation has been revised and split into two: "Hilongos, Leyte: A Study in Philippine Urban Geography," and "Retail and Wholesale Trade Patterns in South Leyte with Special Reference to the Municipality of Hilongos."

He says he would appreciate hearing from members of the PGS who are conducting, or know of, similar research projects in other parts of the Philippines. He can be reached at the following address: Dr. T. M. Burley, Rizal Street, Hilongos, Leyte.

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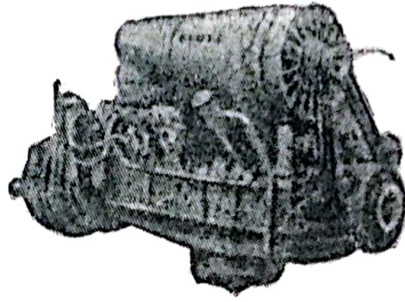
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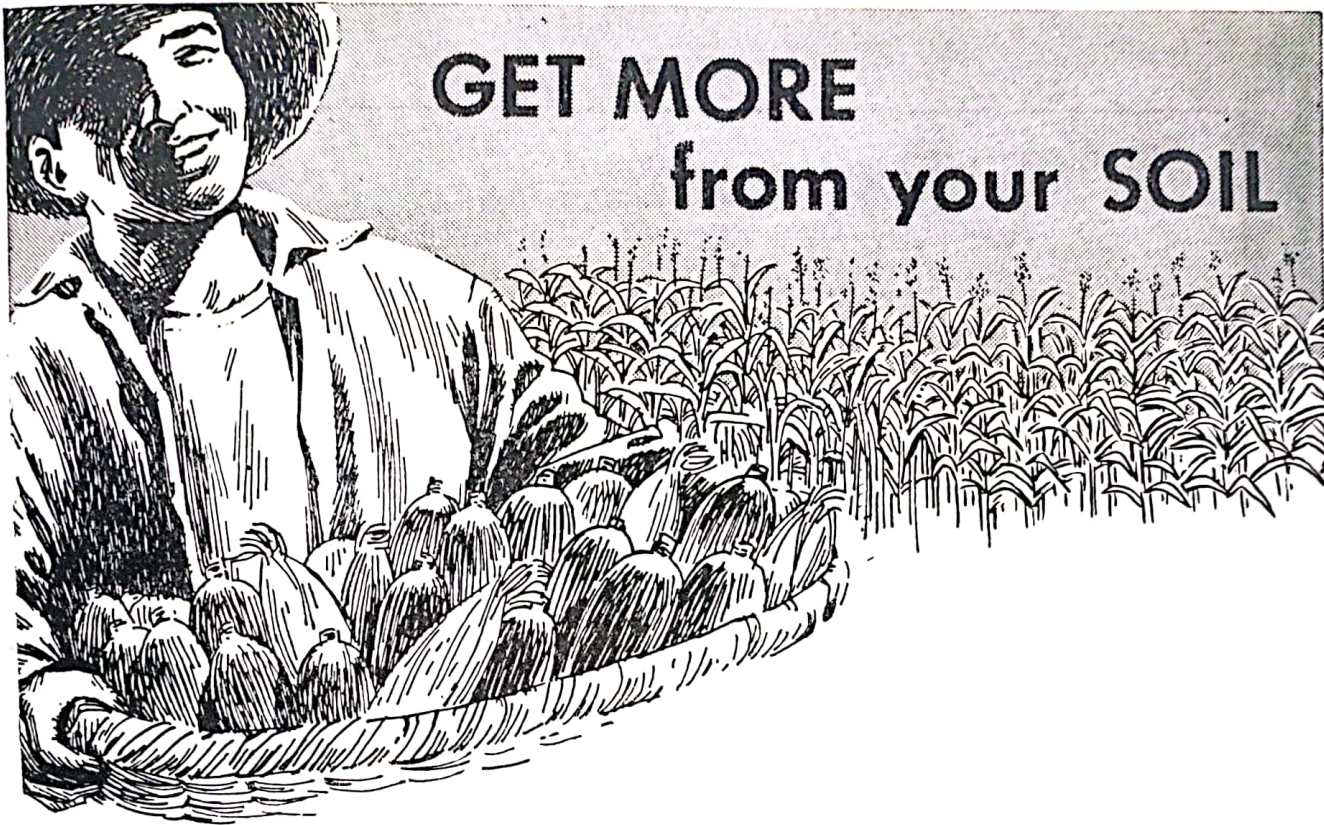
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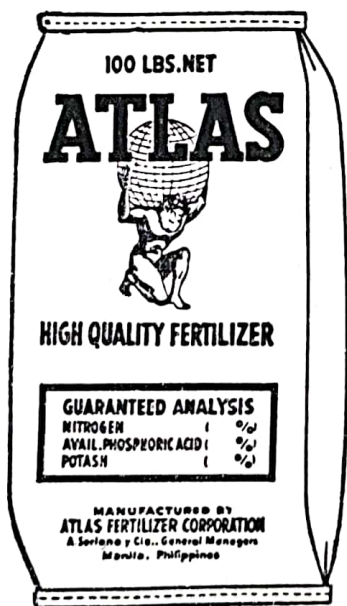


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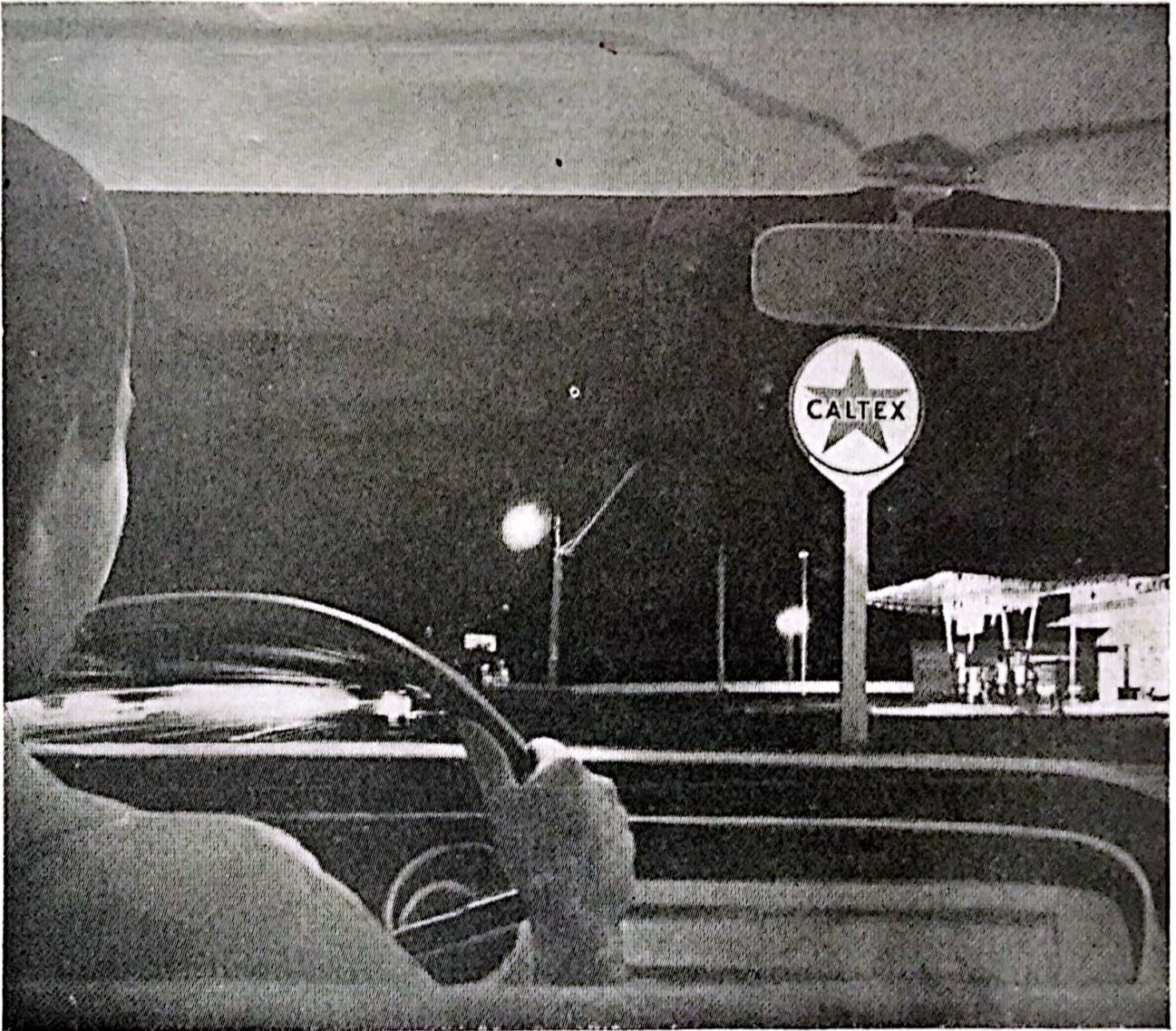
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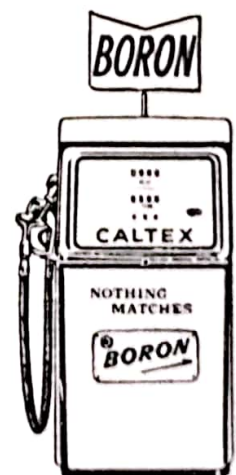
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